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RECENT SMALLPOX IN EDMONTON AND DEDUCTIONS THEREFROM.

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Edmonton

SMALLPOX as a subject of a paper may perhaps appear to be something as to which nothing of importance could be said which is not already fully known to our profession. Nevertheless, I propose to indicate in a few brief paragraphs how it may well be regarded as a subject in which the general practitioner should be interested. Many medical men have gone through their whole course of medicine as students and may have practised many years without ever having seen a case of smallpox. It is not surprising, therefore, that the diagnosis of the disease is frequently not made until the complete development of the rash, leaves no possibility of doubt even to the inexperienced. Furthermore, the protection afforded by vaccination as a prevention, is not in my opinion being sufficiently and properly advocated by our profession as a whole in order to counteract the insidious propaganda of the anti-vaccinationists, who in too many instances succeed in deluding even very intelligent people into a belief in their extravagant claims as to the dangers and inefficacy of the operation.

Since November, 1919, Edmonton has had the disease existing in a greater or lesser degree, and it has required very strenuous work to prevent its becoming epidemic. There have been recorded during the last 21 months 390 cases of the disease. The infection in many of these cases was of a much graver type than we have been accustomed to see in the last decade, though a number of them were so mild as to be unrecognized, and were

only discovered after they had infected other members of the same family or the community, who had the disease in a much more aggravated form. Of the 390 cases, 90 per cent. had never been successfully vaccinated at any time, and the ages of the other ten per cent. who were alleged to have been vaccinated successfully in infancy were adults from 30 to 75 years of age, with one exception. This exception, a 15-year old girl, had a very doubtful evidence of vaccination, which may have been spurious. A significant feature of these 39 vaccinated cases, was that in practically all of them the evidence of successful vaccination had almost disappeared and there was only one mark. Two deaths occurred, a healthy robust unvaccinated man of about 30 years of age, who had the hæmorrhagic type, dying on the fourth day before the characteristic rash had developed, and an infant born with the disease in the hospital, the mother being infected previously.

Of the 390 cases 176 were of school age or under. In many families the outbreak began with the unvaccinated children, who infected their parents before the disease was discovered and, the great majority of the 176 were over six years of age and would have been protected by vaccination, had it been possible to now enforce the Compulsory Vaccination Law as regards school children, which was so successfully carried out up till some six years ago, at which time not a single case of smallpox had developed for many years among the children in attendance at the Edmonton schools,

though a number of adult cases occurred. This law became inoperative, through it being in conflict with the Truancy Act, after a test case had been tried out in the courts. The failure to have the law amended since so as to make it operative, is responsible for at least 60 per cent. of our cases.

Five children in attendance at five different schools were found to be affected, and to have exposed other unvaccinated children to the disease. Prompt vaccination of all unvaccinated children in these schools, of whom there were several hundreds, prevented any further developments among school children. With the exception of about 20 families, no opposition to this measure of prevention was experienced. On the other hand, many parents desired that their children who had already been vaccinated during the last ten years should be revaccinated, a quite unnecessary precaution, as was evidenced by the failure to take, in practically all of them.

The difficulty experienced in bringing the epidemic to an end was largely due to the fact that many cases either through a desire to avoid quarantine, or ignorance of the serious nature of even a mild attack as regards danger to others exposed, remained concealed or unreported for some time, and in consequence the protection obtainable from prompt vaccination of contacts, could not be given in time to prevent developments in those exposed who had not previously been vaccinated, or if so at too remote a period to afford complete protection. There were a number of mild cases which remained unknown and unreported until fully recovered, when examination revealed the fact that they had had the disease some weeks previously. There are unfortunately in every community a minority of entirely unvaccinated people who persist in remaining unprotected even in the presence of a threatened epidemic, and to this class belongs the responsibility of keeping the disease in existence. In every family quarantined at home where several children as well as adults were involved, the unvaccinated ones had the disease, the vaccinated ones escaping entirely, though all were exposed and lived practically together throughout the period of quarantine.

From a public health standpoint the experience of this series of cases leads to the following conclusions:—

1.—*That it is evident the disease is almost entirely communicated by direct personal contact with a previous case.* This conclusion is apparent

from the fact that in at least 75 per cent. of the 390 cases, the factor of personal contact has been clearly established at a date usually 12 days previous to the appearance of symptoms.

2.—*That there is a special tendency to diagnose the disease at the outset as influenza or la grippe, the development of the rash with the rapid decline of fever and subsidence of symptoms four days later, revealing its true nature.* Cases so diagnosed by physicians were admitted to the public wards of four different hospitals. The fact that influenza and smallpox were co-existent and that the early symptoms of smallpox frequently so closely resemble those of a severe attack of influenza, probably makes such mistakes unavoidable. The matter of previous successful vaccination in a case of this kind, so important when smallpox is prevalent, is unfortunately not enquired into in many cases by the physician concerned. When smallpox exists in any community, symptoms resembling influenza, in a person unprotected by previous vaccination, should at least suggest the possibility of smallpox and cause delay in sending such a case to the wards of a general hospital. In a large number of cases remaining at home, the diagnosis of influenza was necessarily changed to that of smallpox, about the fourth day of the attack, when developments showed the disease to be of the nature of smallpox. In a few cases the disease was at first regarded as chickenpox, the mildness of the attack and the unusual distribution and character of the rash making the diagnosis necessarily difficult.

3.—*That the new regulations of the Alberta Provincial Board of Health, which permit of quarantining smallpox in a private house, under the same quarantine regulations as are in force regarding scarlet fever and diphtheria, are quite justifiable.* Over a dozen houses were so quarantined, and though much fear was manifested and very violent protests made by a number of citizens who were unnecessarily alarmed by what they regarded as a great menace to the neighborhood and particularly to themselves, no case of smallpox developed in the neighborhood of any house so quarantined though in some cases the inmates numbered from 8 to 12.

4.—*That the importance of vaccination of nurses in training in hospitals has not been given sufficient consideration.* A patient under the diagnosis of rheumatism or influenza was admitted to the Misericordia Hospital January 30, 1920. On February 2nd her symptoms having entirely subsided she was allowed to leave, though it

was noted she had a few spots on her which were thought to be chickenpox, and no report was made to the Health Department. In due time four nurses in training and one patient developed smallpox as a result of exposure to this case, and it was discovered that vaccination of nurses in training had never been enforced, and as a result none of these four nurses had ever been given any protection, either since childhood or on entering the hospital. At our Royal Alexandra Hospital an orderly became infected from the fatal case of hæmorrhagic smallpox, who was admitted under the diagnosis of influenza, and soon after removed to the Isolation Hospital. Though steps were taken at once to protect all nurses, it later transpired that the vaccination of this orderly had been overlooked by the hospital authorities, to whom vaccine material was supplied with an understanding that all unvaccinated employees should be promptly vaccinated. As a result of this experience, I have strongly recommended to all hospital authorities in Edmonton that no employee, whether permanent or temporary, whether nurse or orderly, should be taken on the staff of the Hospital who, not having been previously vaccinated, refuses to submit to the operation; and there is every reason to believe that the recommendation is being and will be carried out.

5.—*That vaccination of all contacts who, there is any reason to suspect, may have been exposed, and who have not already been rendered largely immune by successful and more or less recent vaccination, is, as a measure of control, of much greater value than all other expedients combined, such as quarantine, disinfection and isolation, though these latter should not by any means be ignored.*

6.—*That the disease is in Canada gradually becoming more virulent in type is evident from the fact that in Ontario recently among 2330 cases there were 35 deaths, or 1.5 per cent.*

7.—*That the best method of vaccination, the after treatment, and care of vaccine material should be given greater consideration by our profession with a view to securing the most perfect protection with a minimum of inconvenience. As to the best method of performing the operation, the writer strongly recommends the acu-puncture method, which is simply puncturing the skin, taking care not to draw blood, with a sterilized needle or better still a bunch of needles held together by a rubber band, through the vaccine drops, of which three are squeezed out on the skin, forming the angles of a triangle of which*

the sides are approximately one inch. The surface of the skin is first prepared by cleansing with alcohol, no other disinfectant being used. By this method no abrading or scratching of the skin is produced, to serve as a focus of possible external infection, as is the case with the old method so commonly recommended, and the amount of pain caused by the operation is reduced to a momentary sting.

No dressing of any kind is needed by this method, except perhaps the fastening of a piece of clean white linen into the sleeve of the undershirt where it covers the area. Corn plasters, wire cages and elaborate dressings need only be mentioned to be condemned, as being frequently the cause of very serious complications.

The necessity of keeping vaccine material in a low temperature should be emphasized. Many failures to secure results are due to the use of vaccine which has become weakened or inert by exposure to high temperature, and a number of the cases recorded, believed themselves to be immune because they had been vaccinated unsuccessfully. A professional nurse took charge of a severe case and believed herself fully protected, as she stated she was vaccinated in November, 1919, with a very sore arm as a result. When she developed the disease, examination of the arm showed no definite vaccination mark but merely a reddish discoloration, which evidently was an infected arm with little or no protection afforded. In this case a celluloid shield was worn from the beginning.

From observation of the vaccinated minority in this series of cases it would appear that the completeness of protection afforded is increased by obtaining three or four definite marks rather than one, because with few exceptions all of them had only one scar, acquired in infancy. Our experience seems to support the theory that the greater the number of vaccination scars the greater the protection afforded.

By the acu-puncture method the scars resulting are usually very small in area and are no disfigurement whatever. Though the constitutional symptoms are quite definite, it is very seldom that any excessive swelling or redness of the arm results from this method of vaccination.

It should be the endeavor of our profession to eliminate as far as possible everything which tends to bring vaccination into disrepute and create doubt as to its efficiency as a prevention, and for this reason I have ventured to refer especially to what has by experience been shown

to be the best method of procedure in obtaining the maximum protection with the minimum of danger and inconvenience.

A matter of interest in connection with this epidemic was the birth of a child in the smallpox

hospital whose mother had recovered from a severe attack a few days previous to confinement. The child did not develop smallpox and though vaccinated with potent vaccine on the day of its birth also failed to develop vaccination.

THE ABATEMENT OF VENEREAL DISEASE.*

GEORGE G. MELVIN, M.D., D.P.H.

Fredericton, N.B.

THIS can hardly be called a modern problem, for the abatement of the cause of venereal disease, prostitution, has been the concern of priest, philosopher and sage, of statesman and altruist ever since mankind associated itself into communities. Indeed, as we all know, so far-reaching and indefatigable were the efforts of our ancestors in this direction and so courageous were they in leaving no stone unturned in their efforts to abolish irregular sexual intercourse, that (it must have been a counsel of despair) they made of prostitution a sacred ordinance, a holy rite, a part of religious worship, in the vain hope that that which was sacred and supernatural in its essence would cease to be a diversion, a means of livelihood, a physical gratification. This action was not so paradoxical on their part as it may seem to us, upon the first glance. It was purely psychological in its application, and could psychology be brought obediently under bit and bridle in the human animal, it would undoubtedly have proved a success. But this trait like every other in man tending to virtuous impulses and deeds, is opposed by the physical, and while winning its victories every hour is also constantly sustaining almost equally numerous defeats. The Puritans of England in the seventeenth century, and their congeners, made a brave attempt to adopt the same principle, coupled and strengthened with concrete and supernatural command, but upon the whole with only very indifferent success.

It will not, perhaps, be admitted that prosti-

tution, that is to say, irregular sexual intercourse, is in the main, the sustaining cause of venereal disease. I at once admit that such a point, so far as theory goes, is well taken, and that in strict logic it is as great a fallacy to say that irregular intercourse solely maintains venereal disease, as it would be to say that it originated it. It is clear that if venereal disease is to be abolished or even abated it must be cured in those individuals now affected by it, not only in those guilty of sexual irregularity but in its innocent victims as well. It is also true that if by some stupendous step venereal disease could be swept from humanity at once, that so far as our present knowledge of it goes any amount of prostitution would not reintroduce it.

Yet, notwithstanding these axioms, the practical fact remains, and which will be acknowledged by everyone who has pondered gravely over this problem, that if irregular intercourse ceased to be practised, a brilliant prospect of the eradication of venereal disease by means of artificial cure, or at any rate, by way of natural immunity and decline of virulence, would at once present itself. Promiscuity in either sex not only diffuses it broadly and secretly, but constantly affords virgin soil in which even the most attenuated virus will regain its full virulence and the vicious stream be thus kept in its full current.

The real problem, therefore, in my opinion, in the suppression or even the practical abatement of venereal disease, is not mainly a medical, but a social one. Again, I admit that, theoretically, these maladies should be amenable to extinction by artificial, that is, by curative means but the

*Read at Meeting of Canadian Medical Association, Public Health Section, Halifax, N.S., July, 1921.

task is far and away too great to be even hopefully thought of by the professional procedures at our command at present. All that can be done to modify the evil of this great upas-tree of humanity by way of treatment and cure, great and meritorious as that work is, is but as lopping off a few twigs and leaves here and there, and it is the social axe, alone, sharpened beyond all precedent by public opinion, convention, and above all, by religious conviction, that, laid to the root of the tree, will, if ever, cause its downfall.

Nor is the belief in the possibility of such an outcome so utterly extravagant, as at first blush might seem to be the case. Who, one hundred—or even fifty—years ago, would have dared to say that throughout the whole of North America, north of Mexico, before this century had passed its first quarter, the drinking of alcoholic liquor would become essentially disgraceful, utterly unconventional, and abolished by popular consent. The very desire for alcoholics is fast becoming a matter of reproach, and although that desire is not comparable in strength to that so closely concerned with our subject, it is strong enough to have led many millions open-eyed to utter destruction.

In view, then, of this astonishing "about face" of the American world in the matter of alcohol, if it be really a permanent movement and not a mere hysterical impulse, we are not entirely justified in at once scouting the thought that irregular sexual intercourse may come to a like fate.

In contemplating the possibility of such an end, we must indeed look carefully about us. We must make it very certain that in attempting its accomplishment, we adopt the means and work in those channels that will bring us nearest and most quickly to its consummation. As noted already, five thousand years and more of arduous effort have not sufficed to advance the cause in any measurable way. Is it not reasonable to suppose, therefore, if all such efforts, so long continued, so strenuously applied, have been quite futile, that some fundamental error in the mechanism of our endeavors has existed from the beginning?

Personally, I have become unable to resist the thought that such has been the case. I put forward what I think has been the cardinal cause of the failure to greatly repress this irregular connection of the sexes with the utmost hesitation, and with a moral timidity not at all consonant with the spirit of the reformer. In modern times, especially, it has been the universal habit, ad-

vanced with the most insistent positiveness by the women and coincided in either inferentially or directly by the men, that in irregularities of this nature there is always a guilty party and an innocent one, the former represented by the man, the latter by the woman. The result is inevitable. For hundreds of years, chastity has been the acknowledged monopoly of the feminine half of mankind and only lost through force, fraud or heartless selfishness.

The woman therefore looks out upon the world of prostitution, public and clandestine, with a detached air, with no proper sense of responsibility for the lamentable condition she views, much as a surviving pheasant might be expected to view the overflowing bag of the sportsman; grieving, indeed, at the downfall of her kind but reckoning within herself no sense of guilt with respect to the tragedy. The man alone—he it is who has done this thing, and to him are addressed all her reproaches, all her supplications for a surcease from his sinning, his brutality and his lust, and all her demands for the protection of her sex.

To an audience of the nature of which I am now addressing, it is unnecessary to call attention to the radical falsity of this feminine view. It is not here practicable, nor would it be seemly to enter upon an argument designed to show the necessary willing collaboration of both parties in such matters, with the exceedingly rare exception of those instances which the law itself punishes with the most rigorous severity, the abuse of superior physical power, of mature over infant understanding, and even of the superior over the dependent.

Surely, in this day of equal rights and equal responsibility, woman will not acknowledge a mental or spiritual or psychological inferiority to man, and if she does not so acknowledge, then indeed the cry of "victim" is a vain one, and she must needs take upon her shoulders the full equal responsibility with the masculine half of humanity for the abounding commonness of promiscuity.

Here, I have become slowly and unwillingly convinced, is the additional force necessary to be enlisted in the age-long combat for purity, for clean living, for the divorcement of the most frightful of all diseases from the most important and sacred function that is given to mankind.

It would be easy, in this connection, to show how great an advantage rests with the woman, individually, in suppressing irregularity; but to an audience of medical men and women this is

unnecessary. Indeed, beyond all doubt, in the vast majority of initial instances, feminine participation is upon an altogether different basis from that of the other participant, and is grounded upon motives that are relatively weak, and most easily suppressible, compared with the natural urge of the male, and the like impulse set up in the female by the establishment of habit.

But the vicious convention already referred to, which is largely the by-product of a pseudo-chivalry, robs the woman of all sense of responsibility, gives her over, for the moment, as a mere victim, or at most as a neutral entity, and then, upon exposure, abandons her to the cruel opprobrium of her sex.

In this matter our very civilization itself is utterly illogical. It frowns upon and denounces promiscuity to a degree beyond which it would be difficult to go, yet encourages the woman, indeed virtually compels her, by the dictates of fashion, to be constantly suggestive. I do not allude here, in any especial way, to the feminine dress of the present moment, nor to any of the up-to-date fashionable social habits. It only requires the shallowest knowledge of the history of civilized dress and social customs of the past five hundred years in order to be sure that our own day is in no way more extravagant, or pronounced in suggestivity, than were the ages that are past. Age cannot wither nor custom stale the infinite variety of artificial feminine methods of attraction. It appears a far cry, indeed, from

the crinoline of our grandmothers to the attenuated skirts of the day, but the longitude of the crinoline no more atoned for the compressed waist and the expansion of the bust which accompanied it, than does the complete obliteration of the waist and suppression of the bust atone for the exposure of the limbs of today.

Is not the female, in crying out for protection, not only illogical but verging upon what might easily be mistaken for sheer hypocrisy? I am confident that no taint of the latter fault lies with her, in general. The man, in this connection, has had a real monopoly of this vile sin for ages in his servile and outward acceptance of the crime charged against him by the opposite sex.

Instead of harboring the merest shred of hypocrisy the women are free from it. One cannot impute hypocrisy to the individual who disclaims responsibility. The two are psychologically incompatible. Her natural desire for finery and the bizarre in raiment—her ruling passion—if the race is to make any progress along the lines of the subject of this sketch, must be as rigorously controlled and regulated by herself as that other overmastering impulse in the male must be controlled by him, and in this statement we catch a glimpse of the difficulty of the task that lies before male and female alike, if we are to attain anything like the same sentiment against sexual irregularity as we have achieved against cannibalism, slavery, and, to be quite up-to-date, as already noted, alcohol.

J. T. GWATHMEY, New York (*Jour. A. M. A.*, Aug. 6, 1921) discusses the value of utilizing the synergistic action of magnesium sulphate with morphin as a preliminary to anaesthesia. It seems to act mechanically with morphin, holding this drug in contact with the tissues longer than it is able to maintain such contact alone; but with ether, and also with nitrous oxid and oxygen, it acts by deepening or increasing the effect, rather than by prolonging it. Hence the same amount of morphin may be used with magnesium sulphate as with sterile water. For instance, one-eighth grain of morphin in 1 or 2 c.c. of a

25 per cent. solution of chemically pure magnesium sulphate is increased in value from 50 to 100 per cent., as compared to the same amount of morphin used in sterile water. One hypodermic of the mixture will relieve pain for from ten to thirty hours., as compared with two to four hours with sterile water. When magnesium sulphate is used with ether, the latter may be cut one-third to one-half in amount. When magnesium sulphate is used with nitrous oxide and oxygen, the oxygen may be considerably increased and the nitrous oxid decreased.

THE EYE AS A SIGNAL OF DISEASE.

W. GORDON M. BYERS, M.D.

Montreal

THE title of my paper could be made to cover more than it is my intention to speak of at this time. Under the heading, one might properly treat of those isolated pareses of the intrinsic and extrinsic ocular muscles that are the forerunners, and for varying periods the sole expression, of organic disease of the nervous system; as well as of those inflammatory and toxic changes within the eye that are harbingers of grave constitutional disorders. But I only wish now to direct your attention to the frequency with which the symptoms, collectively covered by the term asthenopia, are manifestations of bodily ailments in general, as opposed to local (ocular) disturbance. The effort is worth while, if only to rectify a lack of understanding, which underlies on the one hand an imperfect therapy, and on the other exaggerates the general effects of local derangement.

The purpose of this paper is served by stating that the nervous apparatus of the eye forms an appreciable part of the brain's bulk; and that the eye participates through intimate connections with practically every one of the various cerebral functions. As all toxæmias affect the central nervous system, it follows that asthenopic symptoms must frequently form part of the clinical pictures of systemic diseases; and that ocular symptoms of local origin are necessarily heightened by systemic disturbances of any sort.

You are all, I am sure, more or less familiar with the matter in hand; but for the sake of completeness and to refresh your memories I will briefly enumerate the symptoms covered by the term asthenopia:—Headaches, generally frontal in situation, but not infrequently located in the occipital region. Typically, these subside with rest, and develop in association with use of the eyes for near work. Mental confusion of slight degree is occasionally complained of; but quite frequently one notes impaired power of concentrating the mind, and drowsiness. On the other hand, eye-strain is undoubtedly, at times, a cause of disturbed sleep, if not of actual insomnia. Vertigo in varying degrees is a common symp-

tom, and is especially marked in those cases in which the extrinsic muscles are involved. Nausea (rarely vomiting), feelings of distress in the region of the stomach and over the heart, fill out the general picture. As purely local manifestations, one has blurring of the sight, sensations of heat and burning and grit in the eyes, as well as heaviness of the lids, and aching and fixity of the globes.

It is a common experience to note the symptoms I have outlined after confinements and major operations, during periods of nursing, and following prolonged application to work. The same can be said of loss of sleep, grief, and anxiety, and indeed, the artificial conditions of life under which men are compelled to live, in the larger communities especially, are in themselves a frequent cause of a general asthenia which expresses itself in eye fatigue. It was noted that hundreds of men who went to the front were able to discard their glasses in consequence of the betterment of health that resulted from a more vigorous life in the out-of-doors; and one now sees these same men obliged to again wear their lenses on resuming their old positions.

The bodily ailments which may express themselves in asthenopic symptoms cover the whole range of medicine; but I will cite briefly, in illustration, a few typical cases from among an almost endless series:

A young man came to me of himself complaining in their entirety of the symptoms I have outlined. He was a teacher, and believed only that his troubles were the results of his pedagogic work. The ophthalmoscope showed a double optic neuritis, the expression of an intracranial growth which will shortly end his life.

A woman, aged 43, was brought to me by her brother with symptoms supposedly attributable to eye strain. There was a negligible error of refraction, the fundi were normal, and the extrinsic muscles perfectly balanced; but the patient presented all the manifestations of an impending melancholia. I wrote a very urgent letter to the family physician pointing out the necessity of im-

mediate steps being taken to avert a catastrophe; but unfortunately my view of the case was held to be that of an alarmist. Work was continued, and in a few weeks' time the patient entered an asylum where her state became chronic.

A composite report is that of a woman, aged 46, who complained violently of asthenopic symptoms. Her ocular needs called for a mild presbyopic correction; and her general practitioner could find absolutely nothing amiss on careful systemic examination. The view was taken that the ocular symptoms were a manifestation of an approaching change of life. Betterment of the eye symptoms followed a year later, with the occurrence of the usual physiological changes; and with the completion of the menopause the patient regained her power to use her eyes with impunity for any length of time. Cases of this sort are extremely common in ophthalmic practice. Numerous patients at the beginning of the reproductive life exhibit a similar chain of symptoms.

A civil engineer, aged 27, came to me with the same complaints. I prescribed glasses for a well-marked astigmatism, which I felt sure was the cause of his discomfort, more particularly as he was using his eyes in excess for near work. He telephoned me, however, in a few days to say his suffering was unrelieved. A further trial of his correction was ordered; but a message came presently that he was under treatment in the General Hospital for typhoid fever.

A cadet at the Royal Military College returned to Montreal with the usual chain of symptoms. I went carefully over the case, but could find no change from my findings of a year previous. The discomfort on reading continuing, I examined the boy for a second time after an interval of two days, but with the same results; and my statement that the symptoms were expressive of some other bodily ailment was doubtfully accepted. The case was cleared, however, twenty-four hours later by the appearance of a rash typical of German measles.

A woman, aged 44, consulted me with the same complaints. She had a minor error of refraction, for which glasses were prescribed; but she struck me as being markedly anæmic, and I referred her to her general practitioner for treatment. The woman returned in a few weeks stating that she was still suffering, and that her practitioner had

taken her symptoms lightly. The pallor was as pronounced as previously, and I again referred her to her doctor. At the end of another few weeks, the patient not having received the attention I felt she needed, I telephoned her physician that I regretfully would be obliged to turn the woman over to another practitioner if he did not take the case seriously. It was then found that the condition was one of severe anæmia, secondary to hæmorrhoids, profuse bleeding from which was of almost daily occurrence.

A man of middle age, with a moderate error of refraction, suffered for years from profound headaches and eye discomforts which, for various carefully deduced reasons, he felt were of ocular origin, but heightened by intestinal disturbances. Ultimately febrile attacks of several weeks' duration led to the detection of an intestinal pocket through which bacterial infections had been taking place. A cure of the bowel troubles restored the patient's power to use his eyes to an almost unlimited extent without symptoms.

And so on. Allow me only to emphasize the fact that the cases I have cited are not exceptional—that they represent, indeed, a very appreciable percentage of the clientele of every ophthalmologist.

It must be obvious that only a physician, with a thorough special training, backed by a solid grounding in general medicine, is competent to look after any phase of eye work. A man so trained will divide his patients into three groups: those whose symptoms are in all probability of ocular origin; those whose symptoms are in all probability merely an expression of some general disturbance; and border-land cases.

The first group of cases will respond wholly to the treatment of the oculist; the second group falls to the general practitioner alone for solution; but in the third group the problem calls for close co-operation between the general practitioner and the specialist and a careful "follow-up" in the interest of the patient.

At discretion, glasses and local remedies may be tried out for a time to estimate exactly what part eye-strain plays in the production of the symptoms; or general measures may be first tentatively introduced; or combined local and general remedies may be prescribed from the outset.

THE VALUE OF EXPERT ANÆSTHESIA TO ALL CONCERNED.

SAMUEL JOHNSTON, M.A., M.D.

Toronto General Hospital

IN this age of scientific research, there is demand for greater efficiency in every department of the practice of medicine and surgery, and greater need of specially trained men. This is well exemplified in the matter of anæsthesia, where signal progress has been made, so that today surgery has advanced as was scarcely dreamed of otherwise. No branch of medicine has a history more replete with dramatic, even tragic incidents, due mainly to the failure of the world of medicine to grasp the value of the wonderful gift offered to them.

Few men in the history of medicine and surgery have achieved more, or done more to alleviate the distress and pain of mankind, than William Thomas Green Morton, to whom we owe the discovery of the use of *ether* as an anæsthetic, and to whom Sir William Osler referred as "a new Prometheus who gave a gift to the world as rich as that of fire, the greatest single gift ever made to suffering humanity." These men of keen intellect, such as the late Sir Frederick Howitt, made great improvements in the methods of administration of the anæsthetic leading many into the field of expert anæsthesia, until today this work stands out as one of the foremost specialities.

This now brings me back to the title of my paper.

First, I think we all agree that whether he is conscious of the fact or not, the patient is the individual most concerned.

It is probably the most important and most trying moment in a patient's life. He is about to enter into a state of oblivion, and who knows but what, in his mind, he is facing eternity? He also has a horror of the after-effects. No wonder then that he derives comfort from the assurance beforehand of a skilled anæsthetist who is going to carry him through this crisis without trepidation as regards the induction of the anæsthetic or the after-effects.

There are so many dangerous conditions which may arise from faulty administration, such as persistent nausea and vomiting, pneumonia, lung

abscess, acetonuria, albuminuria, with change in the kidney substance, change in the liver, and even change in the heart muscle. In fact, the whole organism may suffer. Where an expert has given the anæsthetic, the possible distress, and complications are reduced to the minimum and such results are of the utmost concern to the conscientious surgeon.

He is relieved of any worry, knowing that if there is any need for alarm, there is at all events one individual who knows the condition of the patient, and who can give with confidence approximate estimate of the patient's endurance. Thus assisted the surgeon is able to do his work without any interruptions, incident to faulty administration, and can perform operations otherwise often impossible. He can select the method of administration appropriate to the particular operation to be performed; he can have his patient in any position; he knows that the best judgement will be used in the choice of the drug to be administered, for the safety of the patient at the time of operation and subsequently. Any failure due to faulty administration can only bring discredit to the surgeon and detriment to the patient.

On the other hand, I know of nothing more gratifying to the surgeon, and more pleasing to the friends, than to have the patient suffer little or no bad effects from the anæsthetic, and to have the surgeon's skill rewarded as it deserves.

The after-care of the patient is reduced to a minimum and the surgeon is not worried about the horrible complications which so often follow unskilled anæsthesia.

To the general practitioner as well, the matter is of serious concern. Few realize what a trying position the family physician occupies when his patient undergoes an operation. So often he has to take the responsibility of making the choice, not only of the surgeon, but of the anæsthetist as well.

The wise and successful physician knows the seriousness of the question of surgery and anæsthesia, and as he wants to do the very best possible

for his patient he often suggests obtaining the services of an expert anaesthetist.

The general practitioner, with all his multitudinous duties and his limited experience in anaesthesia, realizes that the surgeon can render greater service where an expert administers the anaesthetic and so he feels that none but the most skilled can administer an anaesthetic to his patient. To encourage specialism in anaesthesia to some extent would seem always to be a wise policy.

It falls to the lot of nearly all medical men, especially in smaller cities and towns and in rural districts, to administer an occasional anaesthetic; it seems to me that much better service could be rendered and better results could be obtained if in certain areas or districts one or two of the practitioners would make a specialty of the study of anaesthesia and undertake the work in these districts.

It is well recognized that almost all hospitals of any pretension appreciate the value of expert anaesthesia and provide specialists on their staffs. Opportunities have thus been afforded for the development of the art to a very high degree, with the result that the mortality under anaesthesia has been reduced to a minimum, and patients now entering hospitals have for their comfort and safety the services of men of large experience and scientific training in this art.

Among those concerned with the subject of expert anaesthesia is the layman. No one looks forward to the possibility of taking an anaesthetic. A careful business man, knowing that at some time or other he will need a lawyer, generally has some idea of whom he will consult, when necessary; and selects someone in whom he has confidence, not only for his professional skill, but for his discretion, probity and sound judgement.

Unlike the barrister or solicitor, who is chosen by the client himself, the anaesthetist must sometimes be engaged by the surgeon, without reference to the layman. There being no previous acquaintance, the confidence of the layman depends entirely on the reputation of the person chosen, his personality perhaps, or the reliance placed on the surgeon's knowledge of the anaesthetist's skill.

Few laymen trouble themselves with the actual physiological effects of an anaesthetic. What they do realize is that one places oneself absolutely in the hands of another; that one's comfort, recovery, and even life depend upon the skill of that other; and that patients have been known not to recover from the effects of an anaesthetic.

Consequently, when there is a choice available the layman naturally chooses an anaesthetist in whose expertness he has every confidence.

The Expert Anaesthetist.

All specialists are not experts. First of all, the expert must have absolute self-control. Necessarily he gets the most desperate cases to handle, and must be equal to any contingency that may occur and superior to any emergency that may arise. He must be quick to think, and just as prompt to act. He must be exact in his judgement, and be able to give explicit directions without causing undue excitement among those assisting. He must be able to detect the shadow before the actual danger appears, and quickly offset any impending catastrophe. He must never allow his attention to be distracted from his patient, although he must be aware of every movement of the surgeon, and reckon with the loss of blood, the cutting of sensitive nerves, the manipulation of internal organs; he must note the effect of all trauma. He must know on what plane of anaesthesia he is holding his patient, and must be aware of the physiological effect the drug is having.

In other words, the expert anaesthetist's whole concern is the care and safety of his patient, and the giving of such assistance to the surgeon as will enable him to perform the operation in the shortest possible time, and with the greatest ease to himself.

The anaesthetist likewise is concerned with the teaching and development of his art. It is a pity that in so many of the medical colleges and hospitals, more attention is not given to the teaching and demonstrating of the subject of anaesthesia. This is something in which our organizations should interest themselves.

There is also the education of the public in what anaesthesia is and the importance of this subject. In connection with this, I might remark that the ignorance sometimes displayed by intelligent, well-educated members of the laity is astonishing. It is not infrequently that the opinion is expressed that the anaesthetist just puts the patient to sleep and immediately leaves for another case. It seems hardly fair that the public should not have definite information on points like this.

In conclusion, I would like to say a few words on a subject that is attracting the attention of our profession at the present time, namely, the question of the lay anaesthetist.

With the knowledge and experience that is

being acquired in this progressive age, through the efforts of the scientific men who are developing along their special lines, it would be a tragedy to contemplate any tendency to laxity on the part of our profession, in the entrusting of the art of anæsthesia to the hands of the lay-anæsthetist.

To begin with, it is placing the life of the patient in jeopardy.

For example, how can a nurse, who has not had a thorough training in psychology, physiology, pathology, physical diagnosis, therapeutics—or in fact any branch of medicine or surgery—intelligently carry a patient through the different stages of surgical anæsthesia?

It requires a sound general educational foundation, followed by a complete medical course; and after that, special training under an expert in anæsthesia, not to mention an inherent gift for the art, before one may claim to be an expert anæsthetist.

What nurse has ever contributed anything of scientific value to anæsthesia?

If the nurse-anæsthetist is to be employed, then why not the nurse-pathologist, the nurse-physician, the nurse-diagnostician?

How can a nurse sum up the meanings of acid-

osis, glycosuria or albuminuria? How can she cope intelligently with such conditions, as respiratory obstruction, or where an over-dose of morphine has been given, or a case of reflex inhibition, respiratory or circulatory? How can she determine whether or not a patient can take an anæsthetic at all, and if so, how can she know which is the proper drug to be administered in each and every case?

Do many of our profession trust the lives of their families or themselves to the services of the lay anæsthetist? Our patients have a right to the same standard of efficiency as we demand for ourselves.

This matter is not only of the utmost concern to the anæsthetist and the whole profession, but also to the public at large, who entrust their nearest and dearest as well as themselves to our honor and skill.

We all have the highest regard for the conscientious, well-trained nurse. But "let the shoemaker stick to his last." Let us each practice what we have been trained for.

Our aim has been, is, and always will be, to prove by our attainments the value of expert anæsthesia to all concerned.

AN AMBULATORY TREATMENT FOR CHRONIC ULCERS OF THE LEG.

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IN the surgical out-patient departments of all large hospitals chronic ulcers of the leg are a frequent cause of loss of time on the part of the patient, and of heartburnings on the part of the attending surgeons, as well as a reason for the expenditure of much effort on the part of internes and nurses over dressings, which are frequently most unpleasant. The majority of cases of ulcers of the leg heal more or less readily if the patient can be admitted to the hospital, and a rigorous recumbent regime insisted upon. More particularly is bed treatment useful if it be com-

bined with skin grafting and the treatment of the underlying condition especially varicose veins, luetic infection and chronic osteitis.

Any method which necessitates admission of the patient into hospital naturally prevents him from earning a livelihood, and at the same time occupies a surgical bed for a protracted period.

After a number of experiments on a limited scale in the treatment of less important lesions, the author has employed during the past three years in the out-patient department of the Montreal General Hospital, and in private practice, a

method which has proved extremely satisfactory in the treatment of these cases; among other advantages, the patient is immediately returned to his or her occupation as a wage earner or housewife. The method is not original, in so far as it refers to the treatment of ulcers with adhesive strappings. In so far, however, as the author has been able to discover, the method of application, and the exact procedures employed, have nowhere been previously described. As the results obtained have been extremely satisfactory, and have been received with much gratitude by the unfortunates who suffer from such disabilities, it is felt that a description in some detail is justified.

Davis refers to a similar method (*Davis Plastic*

properly carried out, the method is more effective than any other which the author has himself employed, or seen employed by others, and has also demonstrated that unless all details are insisted upon, the method is followed by relative failure.

The leg is bathed in washing soda solution, and thoroughly cleansed with soap suds and a soft brush. Any sloughing material is excised with scissors. After prolonged and thorough bathing, the leg is washed with petroleic ether. Occasionally alcohol may be profitably employed following the water bath for purposes of dehydration of the superficial layers of the skin. The patient then lies on his back, with his leg in a nearly vertical position against the wall. This posture is maintained for from thirty minutes to two hours, at the end of which time the oedema should have entirely disappeared. The leg is by this time



FIG. 1.—Photograph of long standing ulcer of the right shin before application of adhesive plaster.

Surgery, p. 182) but does not seem to be very enthusiastic regarding its use. He states:—"I seldom use adhesive plaster for strapping an ulcer for the purpose of support, but often employ it as a dressing. If the ulcer is discharging, the strapping must be changed at least once in forty-eight hours. The method is expensive and has little advantage over the bandage."

As employed by the author, the average length of time between re-applications of the adhesive has been nearly two weeks. It is thus seen that the method is one of real economy in dressing material as well as in time. In order that satisfactory results may be obtained, it is of the utmost importance that all the details of the method be strictly adhered to. Frequent observation of cases treated by internes, students, or nurses who have not thoroughly understood the importance of the details has confirmed my opinion that when



FIG. 2.—Showing method of application of strapping.

thoroughly dry and is ready for strapping. Too much stress cannot be laid upon the complete drainage from the leg of the interstitial fluid.

The leg is retained in a somewhat elevated position, in order that the veins may remain collapsed, and the strapping is applied. Strips of good Z.O. adhesive plaster are torn, about 2.5 to 3.5 centimeters in width, and sufficiently long to overlap when placed circularly around the leg. Starting from the base of the toes, the foot is encircled by the straps; each layer of strapping overlaps that already in position by at least 1.5 c.m. Care must be taken about the malleoli that cutting edges are not produced. It is not necessary that the heel be covered. When the ankle is passed, the strapping is continued up the leg as far as the attachments of the fascia to the tuberosities of

the tibia and the head of the fibula. This is extremely important, for no matter what the position of the ulcer, there is great danger that if the strapping be not carried up to the point indicated, the tissues above will become cedematous, and bulge over the sharp edge of the plaster, and thus suffer injury.

The adhesive is applied over the ulcer in the same way as elsewhere over the leg, although it is probably an advantage to fix half the length of the strap to the skin on one side of the ulcer, and to exert a certain amount of tension on the strap, in such a way that the edges of the ulcer are approximated toward one another.

If the ulcer be discharging freely, it is wise to

apply a gauze dressing and bandage on the outside of the adhesive, in order that the discharge which exudes between the layers of strapping may be taken up. This should be changed as often as is necessary by the patient himself. The strapping need not be removed unless the discharge becomes distinctly foul. Should it become thus foul, the upper part down to, and somewhat below, the lower border of the ulcer, alone need be changed.

As a rule, the first dressing is changed at the end of from four to ten days. Thereafter from two to three weeks between dressings usually suffices. At each dressing, the same technique as regards bathing, elevation of the limb, and drying with petrolic ether, is employed.

TREATMENT OF CARBON MONOXID POISONING.

CARBON monoxid poisoning is so common in modern communities that the death rate on its account is comparable to that from which diseases, which if not the commonest, rank close after the commonest. The therapeutics of carbon monoxid asphyxia are therefore important. Howard W. Haggard and Yandell Henderson, New Haven Conn. (*Jour. A. M. A.*, Oct. 1, 1921) believe, however, that an earnest protest is needed just now against the almost hysterical attitude which certain elements of the lay public, and even some medical writers, are taking toward this subject. Common sense and common experience as well as thoroughly grounded scientific evidence, indicate that the idea that carbon monoxid is toxic and cumulative in amounts below one part of the gas in 10,000 parts of air is without foundation. The authors and their associates have worked out a standard for exposure to carbon monoxid which may be expressed by the rule: Multiply the time of exposure in hours by the concentration of the gas in parts per 10,000 of air. If the product equals 3 or less there is no appreciable physiologic effect. If it equals 6, there is sometimes slight malaise. If it equals 9, a headache with some nausea is produced in most people. If it equals 15, the conditions are dangerous for anything beyond brief exposure. If it is more than 15, they are extremely dangerous even for brief exposure. An automobile engine may produce 1 or

even 2 cubic feet or more of carbon monoxid per minute. Thus, a car warming up in a small garage (10 by 10 by 15 or 20 feet, that is 1,500 to 2,000 cubic feet), with doors closed on a cold morning, makes an atmosphere dangerous to life within five minutes or less time. It would seem at first sight that inhalation of oxygen would be indicated as the proper treatment for carbon monoxid asphyxia. A close fitting mask and valves would be needed for the administration, for when oxygen is passed through an inverted funnel held over the face, the patient gets practically none of it. But even with a good inhaler, and a well-fitting mask and valves, the therapeutic results are, in fact, not much better than with fresh air. The patient recovers or dies, according as the injury wrought during the asphyxia and the remedial forces of nature may decide. By adding from 8 to 10 per cent. carbon dioxid to the oxygen, breathing is quickly restored to normal, or more than a normal amount. With the aid of this full ventilation of the lungs, the mass action of oxygen in the alveoli quickly displaces carbon monoxid from the blood. This treatment the authors believe is the long sought and ideal therapy for carbon monoxid poisoning. Its application requires a specialized apparatus devised by them for oxygen inhalation for gassed soldiers during the war.

NITROUS OXIDE-OXYGEN ANALGESIA AND ANÆSTHESIA IN OBSTETRICS*

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MR. President and Gentlemen it is not our intention to dwell on the history of anæsthesia. Only, it is worthy of mention that not long after the discovery of nitrous oxide, Humphrey Davy, the first superintendent of the Pneumatic Institute of Clifton, England, while working on the then known gases, noticed that the inhalation of nitrous oxide relieved pain. His friend, Southey, the poet, used to visit the laboratory frequently and inhaled some. So impressed was he that the following eulogy came from his pen to his brother: "Oh, Tom! Such a gas has Davy discovered! Oh, Tom! I have had some!, it makes one strong, and so happy! So gloriously happy! Oh excellent gas bag! Tom I am sure the air of heaven must be this wonder working gas of delight!" And the anæsthetist of today often hears this paraphrased, especially by the parturient woman. This was written in 1798, and yet it was not until forty-six years later that this elastic fluid was used as an anæsthetic, and then chiefly for dentistry for another twenty-four years until Joseph Clover, surgeon and anæsthetist, adopted nitrous oxide for general use in 1868.

Following the suggestion of Paul Bert, Kliksch of St. Petersburg, used laughing-gas in twenty-five cases of labour and reported satisfactory results in 1886. Then rapidly followed the reports of a host of others with results not nearly so satisfactory, so that it was entirely dropped, to be revived not until 1910 by Guedel, Webster and Davis. This revival was made possible by three factors: first, the purification of nitrous oxide by what is known as the acid wash system; secondly, by its admixture with oxygen, and thirdly, by the perfection of apparatus for the control of pressure. So perfected are these factors now that there has been an unfortunate tendency for many to think that an automatic apparatus solves all problems of technique. This,

of course, is a mistake and recently there has begun a movement to create scientific interest in anæsthesia by improving the courses and clinical instruction, not only for the undergraduate medical student but for the post-graduate, to enable those who so desire to fit themselves as competent anæsthetists.

The time allotted does not permit of an exhaustive consideration of this subject, nor do we claim any originality although we had independently conceived the idea; we hope only to arouse sufficient interest by drawing attention to some salient factors.

Of the known anæsthetics, nitrous oxide is the least harmful in its immediate and remote effects on metabolism, recovery after its use is almost instantaneous and usually without post operative complications. The research works of Buxton, Chadbourne, Casto and others on human and animal subjects tend to prove that the percentage of hæmoglobin is always lowered in the anæsthetics of chloroform, ether, and nitrous oxide-oxygen. This reduction of hæmoglobin is most marked with chloroform and the anæmia is severe, recovery taking place not until after the seventh day; with ether, the maximum is at the end of twenty-four hours, after which there is a gradual return to normal in about one hundred hours. With nitrous oxide-oxygen, the reduction is only slight, but in about two hours there is a return to normal. The practical application here is that any case with a color index of hæmoglobin below sixty per cent. is hazardous with ether or chloroform. Nitrous oxide-oxygen anæsthesia is strongly indicated in anæmias where operations must be done. With all anæsthetic agents there is a reduction in the number of red blood cells, slightly less with nitrous oxide, the average extent with this agent being that of sixteen per cent. However, with nitrous oxide, the coagulation time is considerably shortened, this is never the case with chloroform, and it is only slightly shortened with ether. Again, there is a leukocytosis in anæsthesias under all agents, more marked in nitrous

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oxide-oxygen where the average gain is sixteen per cent., affecting chiefly the small lymphocytes and the transitional forms. All these blood changes seem to be due to an increase in the H-ion, and we must remember that this is directly influenced by oxygenation, as increased carbon dioxide tension means increased H-ion content, and this is the real constant in interpreting acidosis. The watch-word, therefore, is to avoid cyanosis and practically this means the maintaining of a good color in the capillary blood, so easily seen at the patient's ears. In shock or acidosis, whether obstetrical or otherwise, where analgesia or anaesthesia is advisable, nitrous oxide-oxygen is the agent of choice of all authorities. This was particularly emphasized by Geoffrey Marshall of London, England, and by W. B. Cannon of Boston in the surgery of our last war.

Now, a word about circulatory disturbances, and this is somewhat intimately connected with blood pressures. Here we find that none of the agents used are accompanied by normal readings. Chloroform causes always a very early and very abrupt fall in all readings, with a marked reduction in pulse pressure. There may be a fall in blood pressure with ether, but not nearly so marked if the administration is properly carried out, whereas with nitrous oxide and oxygen the change is an initial slight rise in blood pressure readings, returning to almost normal as soon as the first stratum of third stage anaesthesia is established, and will remain so for several hours unless some extraneous factor intervenes. On some occasions where too large percentages of nitrous oxide are given at expense of good oxygenation, there will be a fall in blood pressure but this returns to normal as soon as the anaesthetic is discontinued or oxygen added in proper percentage. In interpreting our blood pressure findings in terms of circulatory depression, we classify with McKeeson as follows:—

First degree circulatory depression is that in which there is a fifteen per cent. increase in pulse rate without change in blood pressure, or a ten per cent. decrease in blood pressure without a decrease in pulse rate.

Second degree is that of increase of twenty-five per cent. pulse rate, along with a ten to twenty-five per cent. decrease in blood pressure.

Third degree, which may be known as shock definitely, is that in which the pulse rate is a hundred or more and ascending, accompanied by a progressively falling blood pressure reaching

that of eighty millimetres of mercury systolic and twenty pulse pressure or less.

Again Goodman Levy of London, England, has shown that death from ventricular fibrillations in chloroform anaesthesia may occur during induction, during operation and after operation: (1) during induction in the struggling and excitement, in the removal of the chloroform and in the abrupt administration after removal or a sudden increase during a period of light anaesthesia. Also, by a combination of these three. (2) During operation by a strong sensory stimuli under light anaesthesia; and (3) after operation on removal of this drug, especially in short cases. We may here mention that Flemming's *Coroner's Statistics*, presented to the Anaesthetic Section of the Royal Society of Medicine, show rather conclusively that in the hands of the general practitioner, chloroform involves prohibitive, immediate, and remote mortality, more particularly in the presence of coexisting pathological states, systemic diseases and obstetrical complications. In the year 1911 in England and Wales alone, from the Registrar-General's reports we find that there were two deaths from chloroform every three days. There is a growing tendency to believe—and we think correctly so—that any of the injurious effects of any anaesthetic persists for longer periods than was thought possible in the past, so that the anaesthetic may be an important factor in some of the more remote post-operation complications. This makes one realize that the vulgar term "anaesthetic death" means nothing.

As to the effects of anaesthetics on the liver, it has been found experimentally and clinically that there never have been any changes in the mother or child in this organ with nitrous oxide-oxygen anaesthesia. Nitrous oxide alone when pushed to a completion, produces a liver picture exactly that of ordinary asphyxiation, whereas chloroform is found both experimentally and clinically to cause swelling of the liver cells with fat infiltration and necrosis in mother and child, more particularly the child. Ether does not cause necrosis; but there is a mild form of parenchymatous degeneration and tissue swelling. The works of C. H. Davis of Milwaukee and Charles La Rocque of Montreal are very recent and thorough and their experiments disprove Gwathmey's belief that chloroform vapor is made safe when administered with pure oxygen.

In comparing the mortality under the several anaesthetics, we note that while the mortality rate of nitrous oxide-oxygen anaesthesia is about one

in one million for short operations and one in five hundred thousand for long ones, that for ether is one in sixteen thousand, that of ethyl chloride one in six thousand, and that of chloroform one in four thousand. Even this is not a fair comparison, because nitrous oxide-oxygen is selected as the anæsthetic when all others are contra-indicated often when the patient is practically moribund. In the very worst cases is this anæsthetic selected, so it is surprising that more deaths have not been reported through its use.

Several objections to the use of nitrous oxide-oxygen have been made by many, even of our best men. One is that it requires an experienced anæsthetist: but should not this be the case for any anæsthetic? That anyone can give an anæsthetic is an idea evidently unscientific. Undoubtedly, many deaths have been caused by ignorance. Another is that its cost is considerable. This is true on first sight; but on second thought you will realize that the after effects being much less than with any other agent, your patient is saved so many days in hospital at so much per day. Personally, we prefer to take one chance in one million as against one in four thousand in spite of increased cost.

To combat the frequently expressed argument that the gases are inimical to the mother and foetus in a toxæmic state in which cyanosis is always present, let me emphasize the fact that cyanosis produced in a normal case is a sign of poor administration. If it is possible to maintain good color in normal cases it is equally possible to maintain the same relative balance of color in the toxic cases. Indeed our experience has been that at least during the period of administration we have been able, temporarily, to dispel this toxic cyanosis. This argument against the employment of gases in this class of cases is pernicious and unjustifiable.

Persistent headache has often been quoted as a sequel to a prolonged nitrous oxide-oxygen administration. In our relatively large number of cases this complaint has not been brought to our attention, and to those who have had to combat it we would strongly advise the avoidance of cyanosis.

In our application of this method, the technique for normal labor has been as follows:—

The work is divided between the obstetrician and the anæsthetist. When the former believes labor to be definitely established he administers 1-12 to 1-6 of a grain of heroin or 1-6 of a grain of morphine. This allays the pain of the first stage

to the point of almost complete dilatation of the cervix, the nitrous oxide-oxygen being more particularly reserved for the second or expulsive stage. It has been our experience that the too early use of nitrous oxide-oxygen is an unnecessarily prolonged and expensive procedure. At or near the completion of the first stage, the anæsthetist is called, who, after becoming acquainted with the outstanding details of the case, applies a blood pressure apparatus to the left arm along with a bracelet stethoscope, all tube connections being of sufficient length to avoid any inconvenience in the taking of readings. These are recorded on a chart for this purpose, together with pulse and respiratory rate. The recording of these is repeated at least every five minutes, in order that curves may be made. As explained before, from these curves the slightest depression in circulation can be detected. Recently, we have decided to chart the foetal heart rate. Charts for these observations have been published by the National Anæsthesia Research Society. The uterine contraction is allowed to start before the gases are administered because no pain is ordinarily felt until contraction is fully established, and because of the rapidity of the action of nitrous oxide, analgesia in our experience is quickly produced, particularly in the presence of heroine or morphia. The patient is conscious of her environment so that she may carry out our instructions and yet be free from pain. She is, therefore, told to take four or five deep inhalations. The percentage of gases is impossible to determine for every case. It is safe to begin with nitrous oxide, eighty per cent., and oxygen twenty per cent., the main object being to produce analgesia and maintain good oxygenation. The varying of these figures must suit each individual case, always however, maintaining good color. Let us remember that cyanosis is never a sign of analgesia or anæsthesia. It is rather the sign of a poorly conducted narcosis. This analgesic condition is produced intermittently for each pain until the head is about to be delivered over the perineum, at which point anæsthesia takes the place of analgesia. Here again, we deliberately avoid cyanosis. With the delivery of the child, one hundred per cent. pure oxygen is given under slight pressure until infantile respiration is fully established. We find it unnecessary to slap our babies, and it is interesting to see the lobster-pink color without effort. Throughout the entire procedure, constant maternal and foetal supervision is rigidly carried out in the observing of maternal blood pressures, pulse,

respiratory rate, and color; and also of the foetal heart.

In the toxæmias of pregnancy, the modern obstetrician and anæsthetist are, we believe, fully convinced that continuous and even moderately prolonged anæsthesia under either chloroform or ether, is detrimental to both mother and child. In many of the toxæmias, where the minor operations of obstetrics such as bougie and bag introduction are indicated, the technique may be carried out with little or no anæsthetic. Nitrous oxide-oxygen, in this particular group of cases, is the recognized method. On the other hand, where major surgery is to be performed, the choice must be between the three agents, namely, chloroform, ether and nitrous oxide-oxygen or a modification. There is no question, from the experiments so far made with chloroform, but that it has a detrimental effect on both liver and kidneys in anæsthesias of over five minutes' duration. For the sake of its ready application and powers of relaxation, the usefulness of chloroform anæsthesia must be admitted. To the case or surgeon demanding it, administration for five but certainly not ten minutes, chloroform must be considered permissible; but not without, in our opinion, jeopardizing the patient and her child unnecessarily, simply for the sake of convenience and personal equation. Locally, nitrous oxide-oxygen has not made a way for itself deeply enough into the confidence of all obstetricians; so that we have not, as yet, a very large number of cases of this class to detail. From the results which we have obtained, we feel that nitrous oxide-oxygen is worthy of sincere consideration, not only as a primary and complete anæsthetic but as one secondary to the delivery of the child following primary chloroform administration in operative work.

In our series of cases, the majority of the Montreal Maternity Hospital, we have had to deal with vaginal hysterotomy, abdominal hysterotomy, bougie and bag induction with forceps or version as secondary to either. The conditions being those of toxic vomiting, eclampsia, chronic nephritis and diabetes. In this series we have consistently relied upon nitrous oxide-oxygen as the anæsthetic of choice. In a few isolated cases of abdominal cæsarean section, we have had to add a small amount of ether to obtain the necessary relaxation. Our total number of cases has been 190. Of these, 122 were primiparæ, the remaining multiparæ. Of the total, 142 were spontaneous

and 48 artificial. Of the artificial, the conditions were:

Pyelitis.....	4
Renal Stone.....	1
Hypo-thyroidism.....	1
Concealed hæmorrhage.....	1
Cardiac Disease.....	4
Breech.....	10
Premature.....	5
Toxæmias of Pregnancy.....	26
Placenta Prævia.....	1
Multiple Pregnancy.....	3
Post-operative (App.).....	1
Total	57

and the interferences for these were as follows:

Low Forceps.....	25
Mid-Forceps.....	8
Version.....	2
Accouchement Force.....	2
Vaginal Hysterotomy.....	2
Bougie Induction.....	3
Bag Induction.....	4
Abdominal Cæsarean Section.....	11

The average length of time for nitrous oxide-oxygen analgesia and anæsthesia was two and one-half hours per case in normal labor or in labor leading to forceps, the longest being ten hours and the shortest, one-half hour. There were no maternal deaths. In the uncomplicated cases, there were no deaths of children of the period of viability. In the lot, there were two foetal deaths, one in a case of threatened eclampsia, ten hours after birth, seven months term.; and one from hæmophilia, twelve hours after birth, with a direct history of this condition on the father's side. Here gas was given for two and one-half hours. The mother was an albuminurie,

In contra distinction we may offer hospital statistics for the year 1908 and 1912 inclusive, where chloroform was practically the sole anæsthetic; and it should be stated that these supply a far greater number than we have at our disposal, and wherein, no doubt, many of the patients were in a very bad condition. However, a comparison is interesting.

- (1) Albuminuria of Pregnancy:

Maternal Mortality.....	Nil
Foetal mortality.....	13%
- (2) Nephritis:

Maternal mortality.....	8%
Foetal mortality.....	38%
- (3) Eclampsia:

Maternal mortality.....	11%
Foetal mortality.....	29%
- (4) Vomiting of Pregnancy post-operative:

Maternal mortality.....	5%
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SUMMARY

We make the following conclusions:—

1. That nitrous oxide-oxygen is the most acceptable anaesthetic to the patient.
2. That it is the most difficult to administer properly
3. That it is the least harmful of all known anaesthetic agents to the blood, liver and kidneys of mother and child.
4. That with it the uterine contractions are decidedly stimulated.
5. The freedom from pain permits the parturient woman to use her contractions to the best advantage.
6. Instrumentation is reduced from high and mid to more frequent low forceps.
7. We have at our disposal a remarkable means of exhibition to the child of indirect oxygenation after birth.
8. As against the frequent distressing collapse of the mother in post-partum administration of chloroform, we are not liable to such an unfortunate incident after nitrous oxide-oxygen.
9. It has been established that the uterus in its systole absolutely blanches itself and as these gases are administered only during the rise and acme of the systole no nitrous oxide can be conveyed to the foetus during that period. In a well-

conducted case, the oxygen is commenced at the moment of declination of the systole and continued through the diastole until the uterus is at rest. We would emphasize particularly the necessity of this type of administration because by it alone the foetus escapes all possibility of nitrous oxide influence.

10. In no case in our series of normal labor, labor leading up to forceps or breech extraction, have we been able to find any condition detrimental to mother or child attributable to the use of these gases.

11. In all toxæmias the statistics, in cases where chloroform and ether have been used, in the local records, the results to mother and child have not been as favorable as those which we have been able to present to you now.

12. Above all, constant and momentary supervision is particularly imperative for this is not the work of the lazy obstetric or anaesthetic physician. This is in keeping with the motto of the Canadian Society of Anaesthetists: "We watch closely those who sleep."

Finally, we may say that it is our opinion that every obstetrician should have a working knowledge of anaesthetics as well as every anaesthetist should know obstetrics. Were this the case, there would not only be less blaming of one another but better co-operation and more efficiency.

OCCURRING DURING ANÆSTHESIA

FRENZEL reports that in eight severe cases on record of cardiac standstill associated with anaesthesia, in two of which heart massage had proved ineffectual, intracardiac injections of epinephrin were given with permanently favorable results in five. No ill effects from the epinephrin were observed. The danger of untoward accidents occurring as the result of the injections is very slight if the proper technique is used. The lasting effect of the injections depends to a great extent on the moment chosen for the intervention; only from early injections may good results be anticipated. Frenzel thinks therefore that in view of these facts intra-

cardiac injections in cardiac standstill resulting during anaesthesia should be regarded as a routine measure for resuscitation, and that during every narcosis the instruments needed for intracardiac injection of epinephrin should be ready at hand. It should be noted, however, that epinephrin is not stable and should be renewed every three months. If artificial breathing and heart massage fail after three minutes to revive the patient, an intracardiac injection of 1 mg. of epinephrin should be given, while other resuscitative measures are continued. He reports a permanently successful case from his own experience.

RECENT PROGRESS OF THE MENTAL HYGIENE MOVEMENT
IN CANADA

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THE recent war has been a vital factor in directing medical and public attention to the many problems connected with mental abnormality. Within the last few years Canadians have commenced to realize that mental disabilities are prevalent, and as much in need of skilled attention as are physical diseases. We now know that there are as many individuals in Canada suffering from mental and nervous disorders as there are those afflicted with physical ailments, and competent authorities have pointed out that mental ailments constitute a more serious obstacle to national efficiency than do physical diseases and defects. We are no longer satisfied to deal exclusively with pronounced and often chronic cases of insanity in mental hospitals, but in addition find it essential to give attention to beginning cases of mental disease, and to those who are feeble-minded. We are impressed with the fact that, when neglected, the mentally abnormal fall to the bottom of the social heap, and contribute in large numbers to the ranks of our criminals, prostitutes, unmarried mothers, and paupers.

An organization that has contributed to recent advances is the Canadian National Committee for Mental Hygiene. During the last three and a half years this society has conducted surveys in British Columbia, Saskatchewan, Manitoba, New Brunswick, and Nova Scotia, and has done considerable work in the other four provinces. As a result of these activities, better facilities have been provided for the diagnosis, early treatment, care, and supervision of the class under consideration. Attention might be directed to certain specific progress that has been made.

Insane.

Canada has not been negligent in providing hospital accommodation for the insane. It is interesting to note that there is spent each year for mental hospital care approximately four million

dollars. Extensive buildings, spacious grounds, and general attractiveness typify for the most part our institutions throughout the Dominion. From the standpoint of custody and humanitarian care much has been done. There are particulars, however, in which needed progress should be made, which deserve the hearty support of the medical profession and right-minded citizens. It is a move in the right direction to increase medical staffs. In the past many institutions have been laboring under serious difficulties because the medical help was far from being adequate. When one physician is called upon to minister to the needs of four hundred or more patients, he cannot possibly do justice to the needs of the situation. Our military mental hospitals were fortunate in having a full complement of medical assistance, and the splendid results achieved were a natural sequence.

One of the most valuable instruments in mental hospital treatment is occupational therapy. Experience has demonstrated that when patients are suitably occupied, mental deterioration is often checked, and recovery hastened. While this form of treatment is utilized in routine fashion throughout the Dominion, it is not employed to the limit of its usefulness. There is need for the services of more occupational aides and directors. Probably a solution of the problem will be found in the training of hospital nurses for this form of treatment. Mention should be made of the fact that occupational therapy not only pays for itself, but can with judicious administration be utilized in reducing hospital costs.

The time has now come when social workers might well be attached to the asylums. They can be utilized in paroling patients who might otherwise need more prolonged hospital care. Through the courtesy of the Quebec Government, the National Committee was authorized to conduct an experiment at St. Jean de Dieu and Verdun. A social worker was employed, who supervised

parole patients and assisted in the making of home conditions desirable. As a result, a larger number of inmates were discharged, and in the space of one year the province was saved \$68,186.-25. There seems to be no good reason why social workers should not form an integral part of the staff of every mental hospital in the Dominion.

For some time the medical profession have felt the need for the establishment of psychopathic hospitals that would provide observation and treatment for early cases of mental disease. In the absence of such organizations it has been necessary in many instances to postpone treatment, with disastrous results. Two years ago the Winnipeg Psychopathic Hospital was organized, and has been a boon to the community that it serves. Arrangements are now being made for the establishment of a similar institution in Toronto, and another in Montreal. There are indications that Halifax and other centres will follow suit. The current belief that insanity is generally incurable will be changed when these hospitals are placed throughout the country. It will no doubt be found that the earlier a case is treated, the better will be the prospects of cure.

Feeble-Minded.

Although the feeble-minded constitute a more serious problem from the standpoint of public safety than do the insane, nevertheless they have not in the past received the attention they deserve. Institutional facilities for pronounced cases are still sadly lacking. Ontario has accommodation for approximately one thousand at the Ontario Hospital, Orillia. The other provinces have either no institutions at all, or organizations that are too small to meet the need. It is unfortunate that in many places the feeble-minded are housed with the insane in mental hospitals. Such a procedure never works out satisfactorily. It must be admitted, however, that within the last few years the various Governments of the country have been making plans to deal with this unfortunate class in a more satisfactory manner.

Notable progress has been made in the establishment of special classes in primary schools for mental defectives. Vancouver has a creditable system in which are incorporated twelve of these special classes, and Toronto has a slightly larger number. In Halifax there are three, in Ottawa two, Winnipeg three, Regina one, Hamilton two, Guelph one, and a few others scattered here and

there. In Ontario the National Committee has been co-operating with the Provincial Department of Education in making school surveys during 1921, and there is now a greater demand for special classes than there are teachers who are trained and available for the work. This latter situation will be improved in the near future because of training facilities that are being provided at the University of Toronto.

It would be impossible to over-estimate the value of special classes in the training of mentally handicapped children. We now know that the majority of the feeble-minded, if detected at an early age and if suitably trained up to the period of adolescence, and supervised thereafter, seldom give trouble. Many become trustworthy and productive citizens. It is the belief of the writer that with the provision of suitable training in our primary school system for the class under consideration, much more can be done than by any other single measure in combating criminality and vice. The point should be made clear that the feeble-minded fall into evil ways not because of mental deficiency alone, but rather because of mental enfeeblement plus the lack of early training.

It is gratifying to note that mental clinics are being established in various parts of the Dominion. At present there are three in Ontario, one in Quebec, another in Manitoba, with arrangements to establish others in the large centres of population. The clinic in Toronto has during the last few years reviewed over 6,000 cases, and has been an integral factor in the social work of the city. These mental clinics study individual cases of mental abnormality, and attempt to mete out advice that will result in the best solution that is possible in each instance. The supervision that is provided by the social worker attached often makes possible a satisfactory readjustment without recourse to an institution. It is through these mental clinics that we have learned most concerning the nature and prevalence of mental deficiency and they are useful as research centres.

The relationship that exists between mental abnormality and criminality is often intimate. Studies have shown that from 30 per cent. to fifty per cent. of the chronic, hardened, delinquent class are mentally handicapped. This being the case, it is of considerable importance to have mental specialists attached to criminal courts. In Toronto one such spends his entire time at the Juvenile Court, and Juvenile Court cases in Winnipeg are referred to the Psychopathic Hospital for examination. With this beginning it is hoped

that much greater progress will soon be made. The linking together of the medical and legal professions is necessary in a great many criminal cases to bring about a successful issue.

Immigration.

Reference should be made to recent advances in immigration inspection in Canada. Heretofore we had been in the habit of admitting to our shores many who were of defective or unsound mind. Adequate facilities were lacking at our ports of entry in connection with a careful mental examination of immigrants. Since the creation of the Federal Department of Health, great improvement has been brought about, and we are rejecting a larger proportion of unfits per one hundred thousand than at any time in our history. It will soon be found that the employment of trained psychiatrists for this work will mean an economic saving. We know that an immigrant who is to be cared for over a long period of years in a mental hospital costs the country from four to seven thousand dollars.

Medical Schools.

Psychiatry has been, to a considerable degree, in-

cluded in the medical schools of Canada and other countries. There is a movement afoot at present, however, to give more instruction and to provide better clinical facilities. Since the advancement of mental hygiene depends in large measure upon the fitness of the medical profession to deal intelligently with mental abnormals, one cannot over-estimate the need for the best possible instruction of medical students along this line.

Conclusion.

While Psychiatry has been the most backward of all branches of medicine, indications point to progress. Physicians are beginning to realize that something may be done for mental cases, and that psychiatry forms part and parcel of their professional activities. The better instruction of medical students will go a long way toward the bringing about of that desired goal—early diagnosis and early treatment. Perhaps the chief reason for optimism lies in the fact that the Canadian general public are desirous of seeing the mentally handicapped treated in the most humane and scientific manner, even if such a course means the expenditure of considerable money.

INJECTION OF GAS TO OUTLINE THE KIDNEY

AMONG the newer methods of examination brought to light during the last few years is the injection of air or gas into various body cavities, with subsequent application of the roentgen ray, revealing the outlines of various organs and, in the case of the female genital tract, showing the atencyp of the fallopian tubes. Carelli and Sordelli* have now applied a similar method to throw into relief the outline of the kidney. The technic involves a preliminary roentgenogram to show the location and relations of the second lumbar transverse process. A narrow needle, 10 cm. long, is then introduced down to this bone. When the needle touches the bone, the tip is slanted away from it, and the manometer connected with the needle begins to fluctuate as the tip reaches the adipose tissue surrounding the kidney. With the idea of inducing an emphy-

sema in the perirenal adipose tissue, from 200 to 400 c.c. of carbon dioxid gas are injected, and a second roentgenogram is taken. The report, which is accompanied by six roentgenograms of normal kidneys and three of kidneys with calculi, indicates that, by this method, the authors have been able to show definitely the outline of the kidney, the ureter and the suprarenal gland. In the earlier experiments oxygen was used, but the investigators found that twenty-four hours were required for absorption, and hence changed to carbon dioxid. The little discomfort that patients are reported to feel is said to disappear in less than half an hour when carbon dioxid is used. —*Jour. A. M. A.*, Oct. 1, 1921.

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UNSUSPECTED SYPHILIS OF THE NERVOUS SYSTEM: ITS LABORATORY DIAGNOSIS

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IN THREE PARTS

PART III

Continued from October issue

THE EFFECT OF TREATMENT UPON THE ABNORMALITIES OF THE CENTRAL NERVOUS SYSTEM

PATHOLOGICAL changes of the central nervous system are much more common in early syphilis than are definite manifestations of nervous disease in the later stages. Many of the early abnormalities must disappear more or less spontaneously, so that in judging the effect of treatment all the improvement is not necessarily a result of the drug employed. However, treatment must have a marked effect. In 74 'positive' cases the cerebrospinal fluid was re-examined at intervals after the administration of novarsenobillon in order to determine what changes might have occurred.

The general results are summarized in the following table:—

Type	No. of positive cases re-examined after treatment	No. whose C. S. F. became normal.	No. whose C. S. F. improved.	No. whose C. S. F. became more abnormal.
A	0	0	0	0
B	14	6	7	1
C	29	10	15	4
D	31	5	25	1
Total	74	21	47	6

The amount of drug given to each patient varied considerably. The average was about 2.7 grams, administered intravenously in doses of 0.45 grams. It is seen that many cases became normal and many more improved, some of which had markedly abnormal cerebrospinal fluids. The results lead one to believe that if it had been possible to prolong the treatment the number of improvements would have been still larger.

Re-examination of 'doubtful' cases gave similar findings.

In addition to these improvements, naturally expected, there was a group of cases in which the abnormality of the cerebrospinal fluid was increased after treatment. This occurred in a fluid originally normal, as well as in one that had been 'doubtful' or positive. The reason was, of course, insufficient treatment. It was found sixteen times out of ninety-seven patients who were re-examined, but these men were treated under the pressure of service conditions. In fifteen of them there was some sign to indicate that a cure was not progressing favourably. The exception was in a man in whom the pathological process in the central nervous system progressed while the Wassermann reaction became negative both in the blood and cerebrospinal fluid. He had no signs of nervous disease, but when re-examined the fluid contained twenty lymphocytes and therefore the nervous system could not be said to be normal.

This brings up the question of the practise of making a routine examination of cerebrospinal fluid before pronouncing a person cured. In this instance the patient had not maintained a negative Wassermann reaction in the serum during an allotted time of probation, as is generally required before a patient is said to be cured. It was the first negative serum Wassermann reaction that had been observed in him and therefore his case hardly bears directly on the question.

Fildes and Parnell (13), however, in a series of 174 'D' cases made observations on this point. These were old infections in which it was necessary to differentiate between a cured and a latent case. They found that 31 of the men had abnormalities of the eye grounds or symptoms of nervous disease so that they at any rate were not cured. The remaining 143 showed no clinical signs of active syphilis, and were the possible cures. Of these 143, however, 139 gave a positive serum Wassermann reaction and only four a negative, and of these four, none showed evidence of active disease in the cerebrospinal fluid. Therefore in this series there were no cases in which a failure to cure was revealed by the examination of the cerebrospinal fluid alone. It is possible that occasionally in such circumstances one might find an abnormal cerebrospinal fluid, but on this evidence it would hardly seem necessary to subject every patient to the discomfort of lumbar puncture before pronouncing him cured.

Apart from the one exception around whom this discussion has centred the cases in which the cerebrospinal fluid became more abnormal after treatment gave some indication that a cure was not progressing favourably. Ten of them had a recurrence of active signs—rash, sore throat, etc. In four the serum Wassermann reaction remained positive at a time when it should have become negative if a cure had been effected; and, of these, three are of special interest. Originally they had normal cerebrospinal fluids. After treatment their serum Wassermann reaction did not become negative and they were recalled to hospital. When re-examined they showed abnormal fluids but no clinical signs of disease. This indicates, that even after treatment, a lesion of the nervous system may develop in cases which had originally no sign of nervous system involvement, and that it may be detected before clinical signs of nervous derangement appear. Fortunately these men were caught when the lesions were only commencing and when further treatment could effect a cure.

The study of this series lends weight to the idea that evidences of involvement of the central nervous system should be considered important in deciding the amount of treatment a patient requires. All the men were treated according to a routine plan and therefore the bearing upon the results of treatment of an affected nervous system could be estimated. It was found that failure to cure was four times as common when the nervous system was involved as when it was

normal. Cure was also less frequent in the doubtful cases than in those with normal cerebrospinal fluids. This fact lends conviction to the belief that five to nine cells per c.mm. in a cerebrospinal fluid is really an abnormally high count, and that the cases classed as doubtful were actually cases whose nervous system was already affected. It is also evident that a cerebrospinal fluid abnormal at the time of treatment makes a cure more difficult and is therefore an indication for treatment more extensive than is necessary for another patient with a normal central nervous system.

SUMMARY AND CONCLUSIONS

A large percentage of unselected cases of syphilis have central nervous system involvement as evidenced by pleocytosis and a positive Wassermann reaction in the cerebrospinal fluid. The onset of these variations may be very early. In a few cases they were demonstrable before the Wassermann reaction had become positive in the blood.

The nature of the lesion is undoubtedly a syphilitic meningitis. This conclusion is based not only upon the presence of lymphocytes in the spinal fluid but also upon the frequent appearance therein of a few polymorphonuclear leucocytes when the cell count is high. In a large proportion of the affected cases the fluid showed a positive Wassermann reaction, and in one case (with 1000 cells per c.mm.) *S. pallidum* was demonstrated in the fluid by dark-ground illumination. The central nervous system involvement was found in all periods of the disease. A striking feature of the investigation was the large percentage of so-called "latent" cases with spinal fluid alterations.

Another outstanding feature was the very frequent absence of symptoms or signs of disturbed nervous function. A considerable proportion, however, had lesions of the eye grounds, slight in extent but nevertheless indicative of a commencing retinitis.

Affections of the internal ears were found not to be a reliable indication of nervous system involvement in the cases of this series.

The intravenous administration of novarsenobillon restored many cases to normal and in others effected a marked improvement in symptoms and findings. On the other hand, a few cases showed a definite resistance to treatment and in some

the meningitis actually progressed in spite of repeatedly renewed treatment.

The finding of cerebrospinal fluid with increased cell count should have a profound bearing on the prognosis and treatment of a case of syphilis. As soon as the organisms have invaded the central nervous system the difficulty of bringing about a cure is increased. Failure to cure was four times as common in cases with over ten cells per c.mm. as it was in those whose fluid was normal; and was considerably more frequent in patients with five to nine cells per cmm. than in normal cases. One reason that may account for this failure is the relative inability of salvarsan and similar compounds to penetrate into the brain parenchyma. McIntosh and Fildes have demonstrated (14) that after intravenous salvarsan administration the brain tissue shows no arsenic: it may be reasoned from this that the spirochaetes in the parenchyma of the central nervous system are not easily reached by the arsenical drugs and are therefore more difficult to eradicate.

This explanation is concerned with the clinical observation that if a patient with early syphilis has had treatment and does not become cured, maintaining a positive Wassermann reaction in the serum when it should have become negative, he has probably a focus of disease in his central nervous system.

In view, therefore, of the important bearing that an involvement of the nervous system has in the treatment and prognosis of syphilis, it is probable that lumbar puncture should never be omitted as a routine in the first examination of all cases of syphilis.

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A CASE OF GIARDIASIS (LAMBLIASIS) INTESTINALIS*

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DURING the great world war the role of intestinal parasites assumed considerable importance. In the course of numerous faecal examinations, which were required, more particularly in soldiers from the Near East, organisms which formerly had possessed only an academic interest became very frequent findings.

One of the most interesting of these parasites is the flagellate, *Giardia* (*Lamblia*) *intestinalis*. This organism was discovered by Lambl in 1859, and later in 1879 was rediscovered by Grassi, who, at first unaware of Lambl's report, gave it the name of *Megastoma entericum*; but later renamed it *Lamblia intestinalis*.

The organism was little heard of until the recent war, when it became a surprisingly frequent finding. Fantham (1), for example, in the course of 3325 faecal examinations in soldiers, chiefly from Mesopotamia and the Dardanelles, found *Giardia* 471 times. In America, Kofoid (2) found 5.3 per cent. of 1200 overseas troops (nearly all from France) and six per cent. of 300 home service troops infected. Maxcy (3), in examining stools from 89 children in the Johns Hopkins Hospital, saw *Giardia* in 15. Logan and Sandford (4) report its frequent occurrence at the Mayo Clinic. Three of their cases were from Canada. This is the only instance I can find in the literature where *Giardia* has been reported as occurring in Canadians. The following case is therefore reported to show that the organism is indigenous in Canada.

R. D., a French-Canadian boy of 5 years was sent into the Alexandra Hospital as a case of diphtheria. The past history has only a negative interest. He was born in Canada and had never been outside of the country. None of the family had been further south than Boston. The child did not have diphtheria, but did have a massive oedema of the left tonsillar region,

and a severe hæmorrhagic nephritis. His temperature for ten days assumed an intermittent septic type with daily variations of four or five degrees. During this critical time it was noticed that *his abdomen frequently became distended*, and on one occasion *a small fleck of blood was seen in the faeces*. For this reason the faeces were examined and *numerous Giardia cysts were discovered*.

Following several enemata the abdominal distension subsided; but from time to time as the stools were examined, *Giardia* was constantly found. The vegetative forms appeared only in the stools when they were liquid (usually after a saline purge); and on one occasion only were we fortunate enough to see the motile forms.

The boy recovered from his nephritis, and was discharged quite free from gastro-intestinal symptoms.

Giardia intestinalis has been carefully studied, and the literature on the subject is becoming quite large. For a full description of its morphology the reader is referred to the more recent text-books on parasitology (5), and to the excellent description given by Wenyon (6).

The vegetative form of this flagellate is slightly less than twice the size of a red blood cell (10 to 20 u by 6 to 10 u), possesses eight flagella, and is typically pear-shaped with a large sucking disc on its ventral surface, by which it attaches itself to the epithelium of the duodenum. In this form the parasite is only found in liquid stools, and even then with some difficulty. *The diagnosis must be made by identifying the cysts*. These are oval in shape, possess two or four nuclei, and usually show two longitudinal striations, the remnants of the flagella.

In order to bring out the structure of both vegetative form and cyst, a convenient stain for wet preparations is Donaldson's stain. The stain itself does not keep; but three stock solutions can readily be made, and these will keep almost indefinitely. They are:—1. Normal saline.

*This appears to be the first authentic case of its kind, proven to be indigenous in Canada.

2. Saturated solution of iodine in 5 per cent. potassium iodide in normal saline. 3. Saturated solution of eosin in normal saline.

When required, two parts of solution 1, one part of solution 2 and two parts of solution 3 are mixed. This is dropped on the moist preparation and soon the grosser details of the organism's structure become apparent. Permanent preparations may be made by staining with Giemsa, or by the Iron-haematoxylin method.

Concerning the pathogenicity of the parasite there is considerable dispute. Fantham and Porter (7) regularly produced diarrhoea in kittens and mice by feeding them human *Giardia* cysts. They regard *Giardia* as capable of producing diarrhoea in man, and consider that, since kittens and mice are susceptible, they may become carriers. Undoubtedly the great majority of those infected are symptomless carriers; nevertheless it seems probable that in some susceptible individuals diarrhoea and even dysentery may be set up.

The mode of infection is said to be by the ingestion of cysts, which presumably develop in the stomach or duodenum. The young motile parasite then attaches itself to the epithelium of the duodenum.

The treatment is unsatisfactory. The appearance of the parasite in the stool is often so capricious that it is difficult to say whether a patient is cured or not. Dobell and Low (8) examined the stools of a healthy carrier on a hundred successive days. Several times the stools were negative for a week, and once for ten days. On the same patient these authors tried a variety of drugs, but considered none of them to be efficacious. Kofoed (9) reports favorable results in

rats with arsenobenzol intravenously. Carr and Chandler (10) report an apparent cure in a human case after the intravenous administration of neo-phenarsamine. Other drugs used have been: emetine thymol, salol, methylene blue, etc. The multiplicity of drugs recommended denotes the unsatisfactory nature of the treatment.

This organism is not likely to be encountered frequently in Canada; but it should be borne in mind as a possible causative agent in obscure cases of diarrhoea.

I am indebted to Dr. H. B. Cushing for permission to publish this case.

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PAINS IN THE BACK

GINDSTEDT has long been arguing that sciatica is the response of the sciatic nerve to irritation or strain, usually from some upset in the static balance of the body or over-exertion. His array of arguments to prove that sciatica is the response of the sciatic nerve to irritation or reflex action was summarized in *The Journal*, March 26, 1921, p. 903. He here reasons the same for lumbago and similar pains in the back, and tabulates data from 1,578 cases which apparently sustain this view of their neuralgic nature. The subjects were young recruits, and in fourteen

there was pronounced sciatica besides, including four with both sciatica and lumbago. In all his cases the pain in the back was almost invariably on the same side as the muscular over-strain or static anomaly. A constitutional predisposition to neuralgia is generally evident, or some acquired predisposing factor such as infection, intoxication, worry, meteorologic influences or the like. Sciatica, lumbago and other so-called muscular rheumatism pains thus all belong to the class of equivalent neuralgic pathologic conditions. —*Jour. A. M. A.*, Aug. 2, 1921.

CONSIDERATIONS REGARDING THE SURGICAL TREATMENT
OF MALPOSITIONS OF THE UTERUS*

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THERE are few subjects in gynæcology which have been more written about and discussed than that of malposition of the uterus. During the past decade gynæcology has made a most decided advance. Although practically all the lesions found in the pelvis have been definitely classified, there is still such confusion as to the proper treatment that we are apt to fall into a groove, and the only difference between a groove and a grave is one of depth. I refer to the constant operation of dilation with curettage, followed by a Gilliam suspension, as a routine remedy in all forms of uterine misplacement.

Of course the obvious criticism is that no one method should be a routine. Should custom fashion, or authority dragoon, a surgeon into effecting such mechanical repetition? True surgery is established by the end result, and the end result is and should be our only criterion of what is judicious surgery. The decision as to what operative procedure is necessary must rest upon the combined clinical findings. In considering the treatment of malpositions of the uterus, it is my purpose in this paper to consider the cases which are not benefited by surgical interference, as well as those deriving benefit from operation.

There are many conflicting opinions as to the normal, as well as the pathological position of the uterus. The probable reason for this is, that an abnormal position which will produce marked symptoms in one woman, will cause absolutely no suffering in another. The uterus is considered as part of the pelvic floor, and if a malposition exists, it means some disturbance of this structure. One of the commonest displacements is that of prolapse, which will be seen to be really a hernia of the pelvic floor.

An accurate diagnosis is of prime importance, and to make this, a careful anamnesis must be

taken, followed by a physical examination, which always includes a most thorough bimanual examination. Investigate not only the pelvic, but the systemic condition of our patients. Inaccurate and careless study will result in unnecessary and improper operative procedures.

Symptoms resulting from malpositions of the uterus may first appear in the upper gastrointestinal tract. A retroflexed uterus by pressing on the sigmoid or rectum, may interfere with the passing of the intestinal contents, and gastric distress result, with belching and discomfort after meals. Uterine pressure on the rectum may cause an anal fissure or hæmorrhoids. In the consideration of pain, it should be borne in mind that the actual severity of the pain bears no necessary relation to the gravity of the disease. Chipman has said "that backache of all the painful liars is the most perfect Ananias." Have we not all seen many times, marked malpositions of the uterus without the slightest complaint of backache. Nerve and muscle relaxation should be regarded as causative factors in backache, the uterine malposition also resulting from the cause.

Let us now consider the treatment of some of the most common malpositions. Take the young women with the acute ante flexion, complaining of scanty or absent menstrual flow, dysmenorrhœa and sterility. How disheartening has surgical intervention shown itself in this case! The routine curettage with the use of a stem pessary or a Dudley operation may relieve for a month or two, but invariably the symptoms return with increased vigor. Curettage in sterility is worthless, and even harmful, by producing a certain amount of traumatism in the endometrium, and also some disturbance in the deeper uterine tissues, with resulting cicatrices and lessened chances of pregnancy. These cases will do better on plenty of fresh air, a moderate amount of exercise, and a capsule of thyroid, pituitary, and ovarian extracts each gr. 1. given three times daily.

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No uncomplicated malposition of the uterus should be regarded as a surgical lesion. The uterus does not cause backache, or nervous phenomena, as long as the organ remains natural in size, and normal in mobility. In backward displacements leucorrhœa, with increased menstruation, is almost always present. Permit me here to say a word against an almost universal treatment, carried out usually without any professional advice, that of daily douching. Stop the douching, and the symptoms will usually disappear. Douching does harm in washing away the normal acid secretion; it kills the acid producing bacteria which are the normal inhabitants of the vagina; it kills the superficial layers of cells, and irritates the subjacent layers. It promotes hyperæmia of the parts, and increases the amount of vaginal secretion. Women who douche daily never get rid of their vaginal discharge.

The deciding whether operation will benefit the debilitated poorly nourished woman needs considerable experience and judgment. Will any operation prove beneficent to poor, nervously and muscularly incompetent women, with the intra-abdominal structures in a state of general ptosis? In cases that show general visceroptosis, with large relaxed abdominal walls, operation often results in failure. Treatment here is one of good food, bowel and bladder correction, and the manual replacement of the uterus, followed by the wearing of a suitable pessary.

In deciding what operative measures should be carried out, we must consider the age of the patient, whether married or single, whether within or past the child-bearing period, and the pelvic pathology to be relieved. If definite symptoms are found caused by a retroflexed non-mobile uterus, in a woman who has not borne children, the Baldy-Webster shortening of the round ligaments may be done; in this operation the round ligament of each side is drawn backward through the broad ligament just below the utero-ovarian ligament and sutured to the posterior surface of the uterus, at an area which has been well scarified. The purpose of the procedure is to cause firm adhesions to form between the ligaments and the body of the uterus.

The objection to this Baldy-Webster operation is that the round ligaments are not sufficiently strong to sustain the uterus in its forward position. Were it true that the round ligaments were called upon to sustain the uterus in its position of ante-flexion, this objection would be well founded, but this is not true. The function of the round liga-

ments is merely to draw the fundus in front of an imaginary line, into that position which permits the force of intra-abdominal pressure to be changed into a conservative instead of a destructive force. It is the constantly acting force of intra-abdominal pressure which maintains the uterus in its forward position, and the function of the round ligaments in producing this result, while necessary, is after all of far less importance than the force of intra-abdominal pressure.

The Baldy-Webster operation is essentially the operation of choice during the child-bearing period and should be confined to the uterus relatively normal in size. It is not recommended when the uterus is heavy, as in sub-involution, chronic endometritis, or when neoplastic growth is present. Pregnancy should not take place for at least one year following operation.

In the treatment of uterine prolapse, it is important to secure that result which is best adapted to the exact condition present in the individual case. It is perfectly obvious, that the operation of choice during the child-bearing period would not necessarily hold in a case who had passed the menopause. Also the four common clinical varieties must be considered: (1) prolapse of the anterior vaginal wall, (2) prolapse of the anterior vaginal wall and the uterus, (3) prolapse of both anterior and posterior vaginal walls, (4) complete prolapse of the uterus, with inversion of the vagina, i.e., procidentia.

In the treatment of uterine prolapse, the repair of the relaxed pelvic floor is first attended to. In this we aim to restore the structures which normally form the floor of the bladder, and at the same time to tighten up the relaxed vaginal outlet. A successful perineorrhaphy not only restores the perineal body, but carries the weak place in the pelvic floor forward, out of line of direct pressure, and it further gives the necessary support to the repaired anterior vaginal wall. It is not our purpose in this paper to describe any of the various plastic operations on the vagina, but merely to mention the really important feature of accurately approximating the musculo-fibrous walls, so that one gets a firm broad union in the perineum, and sufficient shortening of the utero-pubic fascial plane to restore the supports of the bladder.

The decision as to what operative treatment shall be carried out within the abdomen, for uterine prolapse, depends largely on whether the function of pregnancy is to be preserved or future pregnancy eliminated. If the uterus is to be preserved for future child-bearing, the restoration of the

pelvic support having been attended to, we must maintain the fundus uteri in the anterior part of the pelvis to decrease and neutralize the intra-abdominal pressure.

The uterus of long-standing prolapse is usually abnormally enlarged and heavy. To meet this condition we must devise a technique that will give sufficient support to this increased anterior weight. The patient must be placed in a marked Trendelenberg posture, and, the intestinal coils being well cleared from the pelvis, the utero-sacral ligaments may be first shortened, following the method of Young. In most cases this is only a step in a series of operative procedures, and as it is often difficult to perform, on account of the deep situation in the pelvis, it may be left to the discretion of the operator as to whether it is absolutely necessary. In any case it is advisable to shorten the round ligaments. There are several

modifications of the Gilliam which will accomplish this. We have found the transperitoneal transplantation of the round ligaments, according to the Crossen technique, to be the most satisfactory. This brings the fundus of the uterus forward, by utilizing the strong proximal portion of the ligament and does not leave a free band in the peritoneal cavity.

In cases where the child-bearing period has passed, or for other reasons is not necessary to be considered, a subtotal hysterectomy with fixation of the pelvic ligaments to the cervix is the most efficient treatment. By this method the tube, and ovarian ligament and the round ligament on each side is united to the corner of the cervical stump. To secure the cervix high in the pelvis, special care must be taken to see that when united to the corner of the cervix the pelvic pedicles are taut.

THE TREATMENT OF IRREPARABLE NERVE INJURIES

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THE experience of the war has proven that end to end suture is the ideal method of treatment of severed nerves. Unfortunately it is not always possible to attain this ideal. Moreover, of those nerves which have been sutured end to end, all do not recover. There exists a group of nerve injuries in which recovery has not taken place. The treatment of these irreparable nerve injuries constitutes a problem with which I propose to deal in this paper.

As indicated above, irreparable nerve injuries fall into two classes, (a) those in which end to end suture has been performed but in which recovery has failed to take place, and (b) those in which it has been impossible to perform end to end suture. If the first group is examined the percentage of failures after suture is found to be rather high. The end results of military cases are being collected, and several series of cases have been reported in current literature. Tinel in his excellent book on Nerve Injuries reports 108 cases with 20 per cent.

completely recovered, and 68 per cent. as improved or recovering. It is well known, however, that Tinel placed great stress on distal tingling on percussion as a positive evidence of recovery. Experience has shown that this sign, now commonly known as Tinel's sign, is not always an accurate gauge of recovery. Many sutured nerves recover completely without displaying it, and many cases in which it is present do not recover at all, or recover imperfectly. It is probable, therefore, that, with the lapse of time, his figures will prove to be too optimistic.

Dumas reporting on 115 cases of musculo-spiral injuries, found recovery in 42 per cent. and some regeneration in 23 per cent. more. Presumably the remaining 35 per cent. were failures. Joyce in 1919 reporting on 36 cases, found recovery in 25 per cent., considerable improvement in 16 per cent., some improvement in 25 per cent., and 34 per cent. failures. Forrester-Brown (September 1920) reporting on 158 cases from the Edinburgh War

Hospital, found 28 per cent. complete motor recoveries, and 50 per cent. partial recoveries. The results varied greatly in different nerves as follows: musculo-spiral 62 per cent. complete recoveries, median 50 per cent. complete recoveries, ulnar 17 per cent. complete recoveries. These published results are not in very close accordance with each other and are somewhat difficult of comparison. The outstanding fact is that recoveries average about 50 per cent. The results obtained in Canadian Military Hospitals agree approximately with this figure.

It is reasonable to believe that as we accumulate experience we shall be able to reduce this somewhat discouraging percentage of failures. Experience in this rather special branch of surgery is accumulated but slowly. It is only now, two and a half years after the last wound was sustained, that we are beginning to draw conclusions from nerve injuries sustained during the war.

Of the several factors which contribute to this percentage of failures, one important element is, that these figures relate to war injuries as distinct from civil injuries. The gunshot wound injuring the nerve at the same time produced a relatively large amount of tissue destruction, and sepsis. The resulting scar tissue is a great bar to recovery. Civil nerve injuries after suture recover more certainly, more quickly and more completely than do war injuries. This is evidenced by published results. Sherren in 1908 reported 21 cases of suture with return to power in all. Kennedy in 1918 reporting on a number of civil cases found that 73 per cent. of sutures were completely successful.

It is common knowledge also that the successful outcome of nerve suture is modified by the nerve which is injured. Pure motor nerves, like the musculo-spiral, recover more certainly than do mixed nerves, like the median and ulnar. This must be due to our inability to exactly match the nerve pattern of the segments of mixed nerves, when we suture them together. It is acknowledged that we should exercise every care to perform the suture without axial rotation of the segments, but it is beyond the greatest skill we can exert to prevent some motor fibrils from being shunted down sensory neurilemma sheaths. When this happens a motor fibril terminates in the skin and the motor impulse it conveys finds no muscle tissue to stimulate. Conversely the area of skin to which it goes will be deprived of a path by means of which sensations may be transmitted to the central nervous system. The reverse oc-

curs when a sensory fibril is shunted down a motor path. The muscle then possesses a nerve fibre which is incapable of supplying the necessary stimulus to contraction. Such fibrils are completely lost, as far as function is concerned. If the nerve which is being sutured is a pure motor nerve, particularly if the motor function it performs is a simple and primitive one, like extension of the wrist and fingers, the large majority of proximal fibres cannot fail to find paths leading to muscles, where their stimuli will produce an accustomed result.

Certain of the sutured cases which fail to recover present evidence that the nerve has pulled apart at the site of suture. If examined they present a neuroma at the level of the suture which, when tapped, radiates sensation to the area supplied by the nerve. If the site of suture is re-explored the nerve presents the appearance of a complete severance. There is a bulb upon the proximal segment attached by a strand of scar tissue to the distal segment. A typical case is the following. A patient, who suffered a complete section of his sciatic nerve, had a nerve suture performed two years ago. Recently, when re-examined, he showed no evidence of recovery. There was complete sciatic paralysis below the knee and complete sciatic anaesthesia. In addition there was a point along the course of the nerve at approximately the level of the suture, which, when tapped, radiated sensation to the sciatic area. Upon exploring this nerve it was found that the sections of the nerve had pulled apart and were now united by a bridge of scar tissue only. There was a bulb upon the upper fragment. Faradic stimulation of the exposed nerve produced no muscular contraction. On sectioning the scar tissue bridge, no nerve fibres were found. These only appeared after cutting back the proximal portion of the nerve. The nerve was re-sutured.

This separation of the nerve segments after suture is due to two causes. First, suture under too great tension; second, imperfect fixation of the limb in a position which will prevent tension on the nerve. Both these causes can be prevented. Relatively large gaps in nerves can be overcome by flexion of adjacent joints. This permits end to end suture. The joints however must be kept flexed for an adequate period of time. At the end of six weeks they may be extended a few degrees each week until full extension is reached. This *must* be done slowly in order to prevent the tearing apart of the nerve at the site of suture. If, when attempting a nerve suture, it

appears likely that approximation can only be obtained by the use of tension, the bulbs on the nerve segments should be drawn together as closely as possible, adjacent joints being flexed, and the wound should then be closed. After an interval during which the flexed joints have been gradually extended it will be found that the nerve will have stretched, so that suture may now be performed without tension. By means of this device it is possible to overcome a gap of an inch to an inch and a half.

From the examination of a number of sutured nerves which have failed to recover, it appears certain that wrapping the site of suture with fat, Cargile membrane or other material, is a cause of failure. The presence of a sheath of vein, or fat, or fascia, about the site of suture results in increased fibrous tissue formation, and this, by constriction, presents a bar to downgrowth of fibrils. It is much better to displace the sutured nerve into a normal muscle plane than to wrap it with any material.

A rare but interesting obstruction to recovery, of which I have come into contact with two cases, is the occurrence of metaplastic bone between the ends of the nerve segments. The two cases were exactly similar except that in one, the nerve injured was the sciatic, and in the other, the median and ulnar. The history of the latter case is as follows:

Cpl. R. was wounded in the left axilla, entrance through the anterior axillary fold, exit through the apex of the axilla. The wound was a clean, through and through, soft tissue wound, and healed in a few weeks. He presented signs of a complete lesion of the median and ulnar nerves. Six months after his wound the nerve injury was explored by an incision across the insertion of the pectoralis major. The median and ulnar nerves were found completely sectioned and involved in a mass of scar, together with the brachial artery. In the scar was a hard mass like a foreign body. On dissecting the artery free from the scar a small spicule of bone was encountered with a sharp point sticking into the artery wall. There was no bone injury (Fig. 1).

An examination, therefore, of those patients whose nerve injuries have failed to recover after suture, shows several causes for such failures. Some factors, such as the excessive trauma due to war, and the variation in the recoverability of individual nerves, are beyond our control. Some failures could have been prevented by avoiding wrappings of foreign material about the site of

suture, or by the prevention of axial rotation of the segments or by the relief of tension on the site of suture.



FIG. 1.—Microphotograph of an area of metaplastic bone occurring between the ends of a severed median nerve and obstructing the downgrowth of fibrils.

A.—Scar tissue.
B.—Metaplastic bone.

In those nerves in which it can be demonstrated that the cause of failure is separation of the segments, a re-suture should be performed. This is rational, even if a great length of time has elapsed since the injury. It is probable that the length of time elapsing between the injury and the suture is not so important as we once supposed. The opinion of the British Medical Research Council, as expressed in a pamphlet on "The Diagnosis and Treatment of Peripheral Nerve Injuries," is that "Delay in uniting the ends of a divided nerve does not affect the prospect of success. As far as is known there is no interval of time between the division and union of a nerve, long enough to exclude the possibility of recovery. As good functional results have been obtained from suture performed two or three years after the date of injury, as from primary suture." With this assurance there is added reason why we should re-explore all those cases of nerve suture which have failed to result in recovery.

Apart from the group of nerve injuries which have failed to recover after nerve suture, there

exists the second group, in which end to end suture cannot be performed; either because the loss of nerve tissue is excessive, or because ankylosed joints prevent adequate flexion. Many ingenious operations have been devised to bridge these gaps, such as fascial tubulization, catgut strands, hardened veins and arteries, nerve flap-scapable grafts, and heterogenous grafts. Unfortunately it is a fact that such operations are almost invariably failures. The occasional partial success is too uncertain to justify their use. Stookey collected all the published cases of bridging of gaps by nerve flaps up to 1914. Of 23 cases only two showed any evidence of recovery and in both these the degree of recovery was doubtful. Platt in 1919 published the end results of 18 cases in which grafts had been used to bridge gaps. In the majority of these cases a period of two years or more elapsed since operation. There was no evidence of recovery in any case. Dean Lewis in 1920 reported that in 12 cases in which he had used cable transplants, and in 6 in which he had used tubulization, there was no evidence of recovery. He concludes that either the results obtained experimentally cannot be applied clinically or else our technique is at fault.

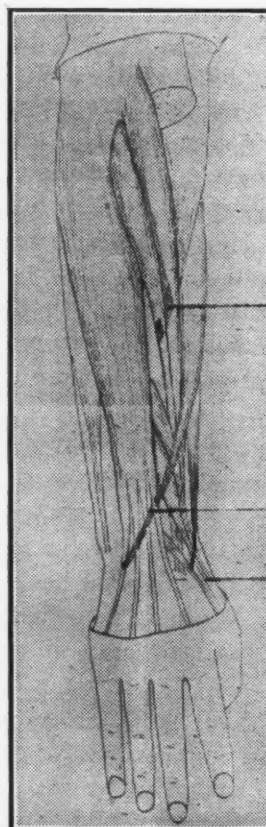
It is possible to improve irreparable nerve lesions by tendon transferences. The brilliant results obtained in some situations encourage one to believe their use might be extended. The principle underlying tendon transferences is the detachment of tendons which can be spared from normal muscle groups, and their implantation into the paralysed tendons. With care in the selection of the tendon to be transferred and adequate after treatment, the function of the paralysed tendon is taken over by the transferred tendon. It is not possible to lay down general rules covering all tendon transferences. Each nerve injury requires different treatment.

The most conspicuously successful results have been obtained in the case of musculo-spiral injuries. Here the problem is purely motor. Sensation does not have to be considered, since the sensory area of the musculo-spiral nerve is small and unimportant. Another factor which probably aids in the successful result is the fact that in the fore-arm, movement rather than strength is the important function. There are, also, on the flexor side of the fore-arm, several muscles which may be used for transference without impairing the function of the hand. The pronator teres may be used, leaving the forearm to be pronated by the pronator quadratus. Similarly the flexor

carpi radialis, the palmaris longus, and even the flexor carpi ulnaris may be transferred, leaving the wrist to be flexed by the long finger flexors.

The technique of the operation, as performed at the Dominion Orthopaedic Hospital, is as follows (Fig. 2):

An elastic tourniquet about the arm produces a bloodless field and greatly facilitates the opera-



Pron. Teres to
Ext. Carp. Rad. L. & B.

Flex. Carp. Rad. to
Ext. Dig. Com.

Palm. Brev. to
Thumb tendons.

FIG. 2.—Diagram of the operation of tendon transference for irreparable musculospiral injuries.

tion. An incision is made on the radial margin of the forearm along a line extending from the external condyle to the dorsal surface of the base of the thumb. It terminates by a J-shaped curve outwards. Through this incision are exposed and freed, 1st, the tendon of the pronator teres between the supinator longus and the radial extensors of the wrist; 2nd, the tendons of the extensores carpi radialis longus and brevis; 3rd, the three tendons to the thumb, extensor pollicis longus, extensor pollicis brevis, and abductor pollicis longus; and 4th, the extensor digitorum communis. The tendon of the pronator teres is then freed from its attachment to the radius. With a tenotome, the adjacent tendons of the extensores carpi radialis longus and brevis are pierced obliquely in the line of pull of the pronator teres,

and the tendon of this muscle is passed through the openings. It is sutured to the tendons of the extensores carpi radialis longus and brevis with interrupted sutures of fine linen; the hand should be well extended during the suturing and the muscles kept under gentle tension. The forearm is then turned over and a median vertical incision made from the wrist to the middle of the forearm. Through this the tendons of the palmaris longus, and flexor carpi radialis are exposed and cut off as low down as possible. A tunnel is then burrowed through the subcutaneous fat from the

the tendons kept under moderate tension. In a similar fashion the tendons of the extensor digitorum longus are pierced obliquely and through the openings the tendon of the flexor carpi radialis

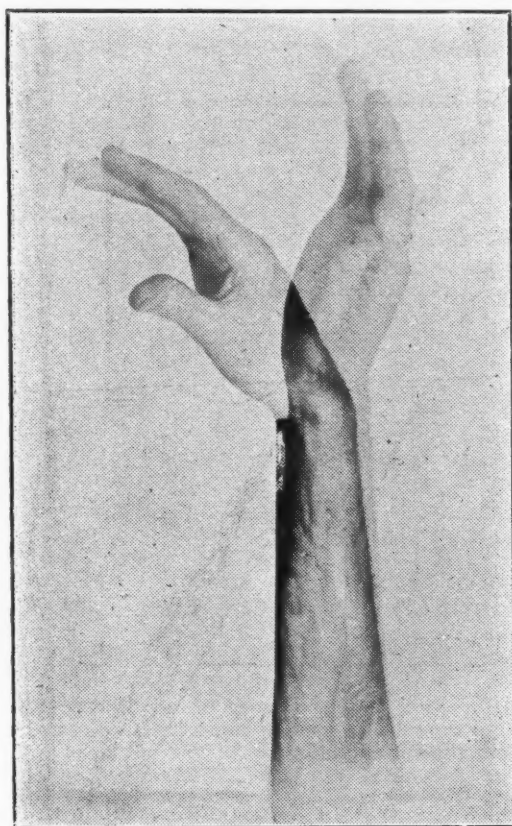


FIG. 3.—Sgt. L.—Range of movement of hand 3 months after tendon transference for irreparable musculospiral injury.

upper end of the anterior incision to the lower end of the posterior incision. The obliquity of this tunnel should be made to correspond to a line from the internal condyle to the dorsum of the wrist, in order that the line of pull of the transposed muscles may be direct. Through this tunnel the two volar muscles are drawn. The forearm is then pronated and the thumb tendons picked up. These are grouped together in a bundle and pierced by a tentome. Through these openings the tendon of the palmaris longus is passed and sutured with interrupted linen sutures. The thumb should be abducted and extended and



FIG. 4.—Gnr. J.—Range of movement of hand resulting from tendon transference for irreparable musculospiral injury. He has worked for two years as a teamster.

is passed and sutured. The line of suture should be such as to permit the transposed muscle to pull in a straight line from its origin to its new insertion. It is important that all the transposed tendons should be scarified and traumatized before suture. Smooth, glistening, unharmed tendons will not unite strongly to each other. They must first be traumatized, in order to stimulate an adequate inflammatory reaction to produce sound union. After suture of the tendons the tourniquet should be removed and all hæmorrhage carefully controlled. The wound is closed by a sub-cutaneous catgut suture only.

It seems to be of value to leave the fascia unsutured and to place the subcutaneous fat directly down upon the sutured tendons. The hand and forearm are incased in plaster, the hand and fingers well extended and the thumb abducted. It re-

mains in this position for three weeks, and is then released and supported during the period of re-education by a light cock-up splint.

The after treatment is important. After many trials we have abandoned all other methods save the following: Treatment is commenced three weeks after operation. The patient's arm is placed in warm water for fifteen minutes. This is followed by massage and gentle passive movements for half an hour. He then commences the re-education of the transposed muscles under the supervision of a worker. The plan followed is to

failure, repeated continuously, until suddenly the correct method is discovered. Re-education of the patient along anatomical lines, i.e., teaching him the transposed muscles with their old and new function, has not been successful. The brain appears to be concerned with the result rather than with the mechanism of its attainment.

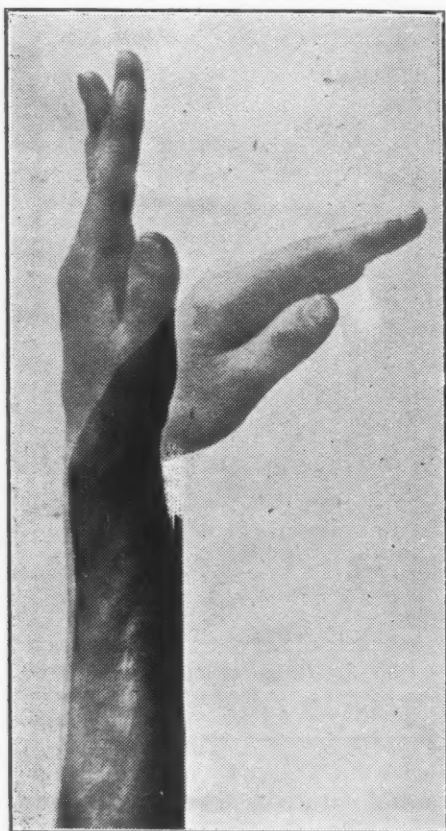


FIG. 5.—Pte. G.—Range of movement of hand resulting from tendon transference for irreparable musculospiral injury.

induce the patient to perform movements which necessitate the contraction of the transposed muscles. He is asked, for instance, to spin a top, to flip a coin, or to play crokinole, in addition to the simpler movements of flexion and extension of the wrist. The usual experience is that for some time the patient is utterly unable to perform any of these movements. After a varying period of time he suddenly learns how to perform a movement and after that it is only a matter of developing strength. He learns the new movement in exactly the same way that an infant learns to perform co-ordinate movements—by trial and

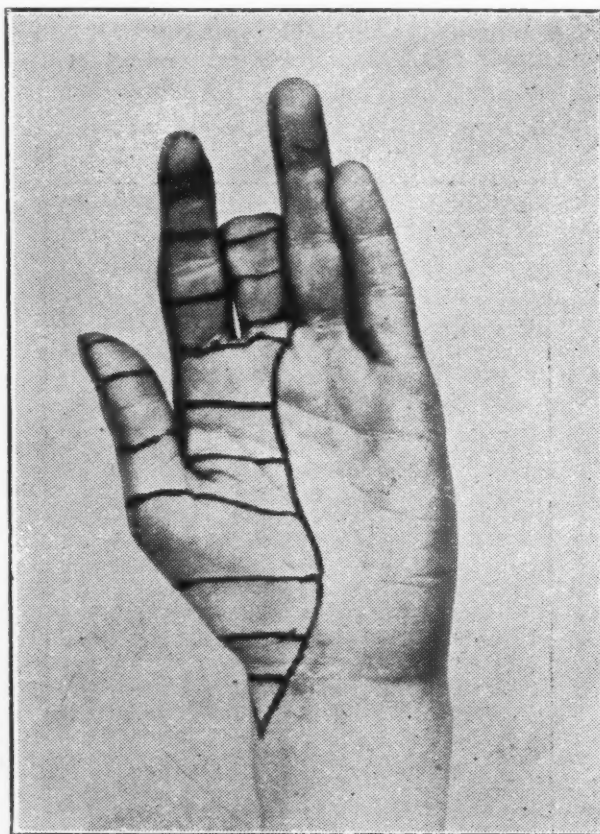


FIG. 6.—Pte. C.—Anastomosis of radial nerve to median nerve for the relief of median anaesthesia. Area of anaesthesia at time of operation.

There are one or two points which must be observed to avoid failure. It is necessary to keep the hand and fingers well hyperextended when performing the transference, and also to suture the tendons under moderate tension. If this is not done, the range of extension will be only fair and will probably not extend beyond the straight line. It seems impossible to hyperextend the hand too much. In suturing, the transferred tendons must be scarified and traumatized sufficiently to produce a moderate inflammatory reaction, without which sound healing will not take place. In two cases, a second operation has shown that the cause of apparent failure was due to slipping of the tendons. This was corrected and a good result obtained in each case.

The results have been extremely gratifying. (Figs. 3, 4, 5). Practically 100 per cent. of the

cases have been improved by the operation, most of them very markedly so. Before operation the paralysis of the extensors produces drop wrist and prevents use of the hand because of the lack of fixation of the wrist. The average result obtained by operation is one in which the range of extension of the wrist is restored to about two-thirds normal. The thumb, which before operation was curled into the palm of the hand, can be abducted clear of the flexing fingers. Power is usually subnormal

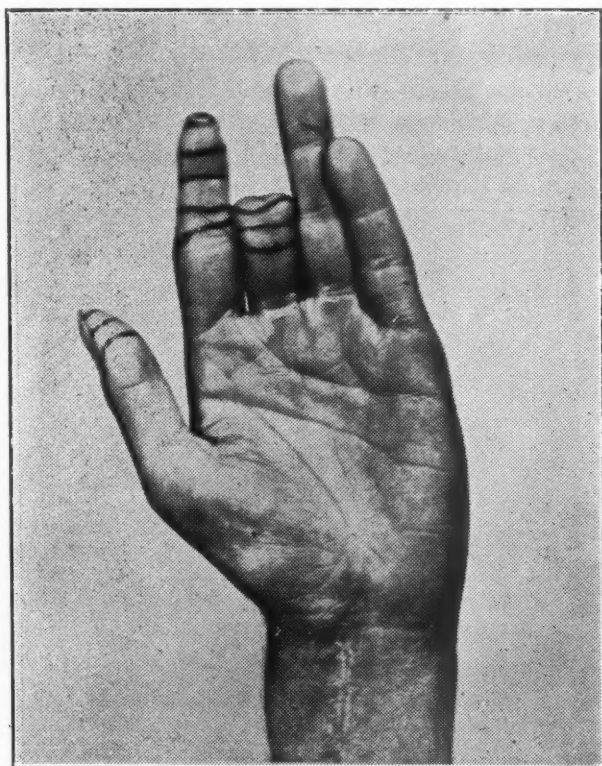


FIG. 7.—Pte. C.—Area of anaesthesia eight months after operation.

although many of the patients have been able to carry out arduous occupations. One is a teamster, another works on a railway, a third drives a car. Contrary to expectation, radial deviation does not usually occur, or if it does, to only a slight degree. It is astonishing to see how nearly perfectly the transposed pronator teres replaces the function of the radial extensors of the wrist, especially when one considers that it comes from an antagonistic group of muscles, and from another nerve supply. It is very easy to demonstrate that wrist extension is actually due to the pronator teres, because the belly of this muscle can actually be seen and felt to contract, as extension takes place.

The problem of attempting to relieve a median nerve injury so severe as to be impossible of suture,

is very much more difficult. The great obstacle is the fact that there exists anaesthesia as well as paralysis. Moreover it is anaesthesia of an extremely important area. The loss of sensation in the tips of the index and middle fingers and thumb, completely incapacitates the hand. Even if muscle function is good, the anaesthesia will

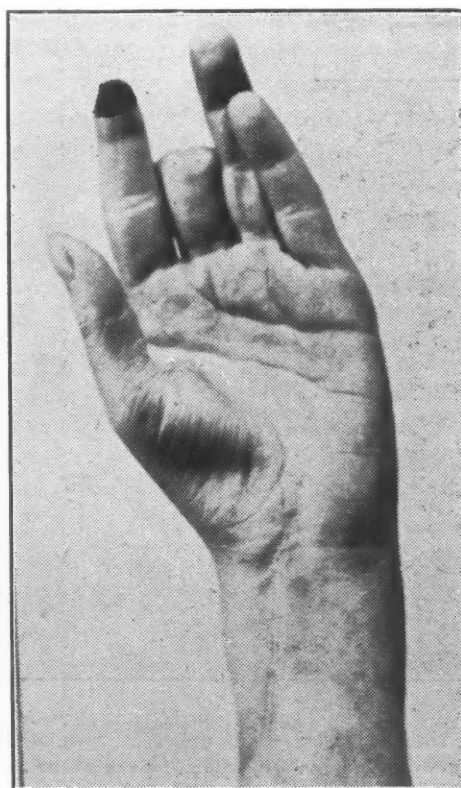


FIG. 8.—Pte. C.—Area of anaesthesia eleven months after operation.

prevent the use of the hand. It is obvious that the primary problem is to relieve the anaesthesia if possible, and then attempt to restore muscle power by appropriate tendon transferrences.

In an attempt to solve this problem we have performed an operation, which, so far, has given distinctly encouraging results. In a patient who had a low median injury with so much destruction of the nerve that end to end suture was not possible, an attempt was made to restore sensation by anastomosis of the radial nerve into the median. The operation presented no technical difficulties. The radial nerve was exposed low down and cut off at the level of the base of the thumb. It could well be sacrificed since it only supplies sensation to a small and unimportant area at the base of the thumb. The lower segment of the median was exposed through an anterior incision. A tunnel was made through subcutaneous fat, and

after passing the radial nerve through it, end to end suture with the median was performed. Commencing three months after the operation, the median area of anaesthesia to pin prick began to diminish and steadily continued to do so until at the present date there remains only a minute area at the top of the index finger (Figs. 6, 7 and 8). The improvement in this case is sufficiently encouraging to warrant one in hoping the opera-



FIG. 9.—Cpl. S.—Tendon transference to restore opposition of thumb. Degree of opposition obtained by implanting half of tendon of flexor pollicis longus into head of 1st. metacarpal.

tion may be useful in dealing with similar cases. If it is possible by this means to restore sensation, even though sensation be imperfect, it should not be difficult to improve the paralysis by suitable tendon transferences.

From the point of view of paralysis and its improvement by tendon transplantation, median nerve injuries may be classified as low and high. In low injuries the injury is below the level of the supply to the muscles in the forearm but above the wrist. In consequence there is paralysis of only the muscles of the ball of the thumb. Of these the most important is the opponens. Not infrequently the superficial head of the flexor pollicis brevis is supplied by the ulnar nerve instead of the median. When such is the case the movement of opposition is retained even though the opponens is paralysed. Tendon transference, therefore, need not be considered. If there is complete loss of opposition, it might be restored by transference of the insertion of the deep head

of the flexor pollicis brevis from the inner to the outer sesamoid bone of the thumb (Fig. 9).

In high median injuries the point of injury is above the elbow and there is in consequence paralysis of the muscles of the forearm, in addition to the muscles of the ball of the thumb. Such extensive paralysis presents difficulties. The supinator longus is available, however, and one of the radial extensors could be spared to transplant into the paralysed median tendons. That such a transference is feasible is demonstrated by the following case:

A soldier sustained a gunshot wound of the left forearm which severed his median nerve and radial artery, cut across all the flexor tendons and destroyed his thumb. The thumb was amputated.

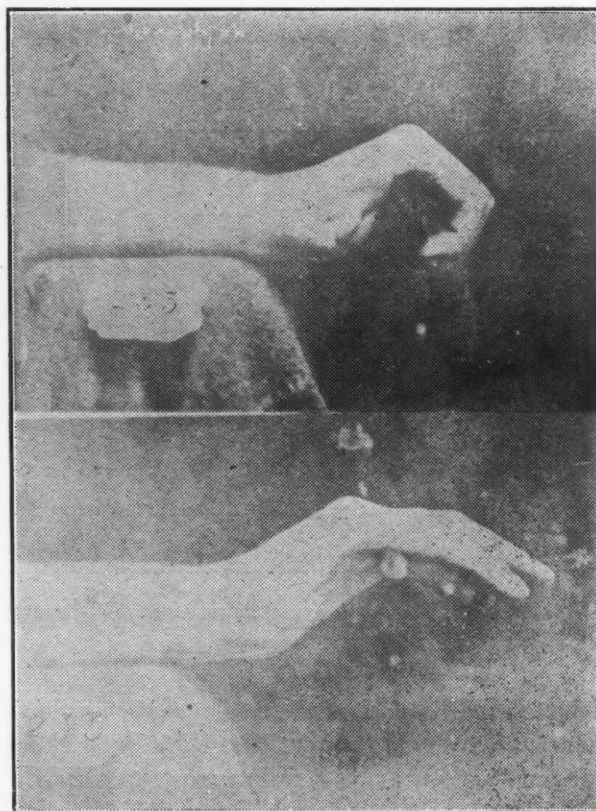


FIG. 10.—Pte. H.—Tendon transference to restore flexion of fingers. Range of flexion 6 months after operation.

He had complete loss of power of flexion on the index and middle fingers because of the severance of the flexor tendons. The abductor pollicis longus, now of no use because of the loss of the thumb, was freed and transplanted into the tendons of the flexor digitorum sublimis. In a comparatively short time he regained the power of flexing his fingers (Fig. 10).

The problem of restoring function to the ulnar nerve is more difficult. On the other hand an

ulnar lesion is not so disabling as section of either the median or musculo-spiral nerves. The paralysis of the numerous small muscles of the hand incapacitates the patient from the performance of fine movements of the fingers. Gross muscular movements of the arm and hand are interfered with but little. The disability is much greater for a professional man than for a laborer. The anaesthesia of the ring and little finger is usually not of serious importance. The ring finger often becomes markedly contracted and flexed into the palm so that it interferes with work. Amputation is indicated in such a case.

The function of the leg is such that tendon transferences do not give such satisfactory results as stabilizing operations. This results from the fact that the chief function of the leg is weight bearing, in contradistinction to the chief function of the hand and arm, which is co-ordinate movement. Tendon transferences, when successful, restore movement, but usually strength is subnormal. They can produce a functionally useful arm, but in the leg stable strength is needed more than movement or delicacy of co-ordination. In the case of unrecovered sciatic lesions the indications are, therefore, to stabilize the foot rather than attempt to restore its movement by tendon transferences.

Fortunately there are few cases of injury to the sciatic between the knee and the hip in which it is not possible to secure end to end suture. The great length of nerve which can be freed and the large gaps which can be bridged by flexion of the knee and extension of the hip, make it unusual to find a gap too large to bridge. Permanent sciatic cases presenting themselves for treatment are, therefore, mostly cases which have already been sutured. Some of them undoubtedly have failed to recover because the segments of the nerve have pulled apart at the site of suture. In such cases re-suture is indicated, with care to prevent tension upon the site of suture after operation. A plaster spica with the knee flexed and the hip extended, is the most satisfactory means of providing fixation.

Even when there exists a complete sciatic lesion which has not shown signs of recovery, it is surprising how well function of the leg is retained. Such patients use their leg and walk very well. They are subject to pressure ulcers, so called "trophic." These can be avoided with care. Those patients who regularly examine their anaesthetic feet and take pains to see that points of pressure are relieved, have very little trouble with ulcers, while heedless patients have repeated

ulcers. All voluntary movements of the foot are completely lost, but because of the very fact that all muscle groups are paralysed, the foot is not pulled into a deformed position by unbalanced muscle groups. As the paralysed and atrophic muscles fibrose, the tendency to dangle foot becomes less.

When the paralysis is incomplete there is much greater tendency to deformity because of the unbalanced muscle pull. In such cases a suitable tendon fixation will correct the deformity and prevent the necessity of wearing an appliance. If the anterior tibials and peroneals are paralysed, and the foot is in paralytic equino-varus, the deformity may be corrected by fixation of the tibialis anterior to the tibia, and the peroneals to the fibula. It is important in performing this operation that the tendon be very thoroughly scarified and traumatized and placed in firm contact with bare bone. Only by this means can union take place, of sufficient firmness to maintain the foot in the correct position against the pull of normal muscles. The deformity must be well corrected during the operation, and the tendons must be sutured under moderate tension. All strain on the site of suture after operation must be prevented by an adequate plaster. Properly performed fixations have given very satisfactory results. They improve the gait and do away with the necessity of wearing a splint.

Summarizing our experiences with irreparable nerve injuries, we may draw the following conclusions:

1. A group of nerve injuries exist to which the term "irreparable" may well be given, since they consist of:

- (a) Sutured nerves which have failed to recover.

- (b) Nerve injuries which cannot be sutured end to end.

2. A few cases in the first group have resulted from imperfect suture. Such cases should be re-explored and re-sutured if possible.

3. The remaining cases must be treated by secondary operations such as tendon transferences and tendon fixations.

4. Irreparable musculo-spiral injuries can be greatly improved by tendon transference.

5. Irreparable median lesions may be improved by nerve anastomosis to relieve anaesthesia, and tendon transference to overcome paralysis.

6. Irreparable sciatic lesions are better treated by means of stabilizing operations such as tendon fixation, than by tendon transferences.

I am indebted to Dr. W. E. Gallie for notes and specimen of the cases of bone meta plasia.

THE SURGICAL TREATMENT OF GASTRIC AND DUODENAL ULCER*

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BEFORE entering upon my part of this afternoon's discussion I want to say how much I have profited by what has already been said on this old and eternally new topic. Without making any invidious distinctions, I want particularly to express my appreciation of what Dr. Sippy has done by his persistence in stimulating the study of this important subject. There is no doubt that the use of his method before and after surgical treatment has greatly enhanced the good results obtained from surgery. In fact, as Dr. Charles Mayo has recently said, the surgical treatment of ulcer is the best recognition of the medical treatment, inasmuch as it permanently overcomes delay or obstruction and reduces acidity with the patient's own alkalies.

In addition to the value of medical treatment before and after operation for ulcer, especially after, it is pre-eminently the best course to pursue in the care of acute ulcer; but for the old sinner, the chronic ulcer, the old ulcer, I think medical treatment is only encouraging an overt act, such as acute perforation (which in my experience occurs in twenty per cent. of cases) carcinoma, and hæmorrhage.

In the surgery of duodenal and gastric ulcer the most desirable thing, of course, is, wherever possible, to excise the ulcer. Conditions permitting, this should always be done either with the knife or the cautery. When the ulcer is small and the mechanism of the stomach has not been seriously disturbed, excision alone may suffice. This however is rarely the case, probably owing to the pronounced chronicity of nearly all duodenal and gastric ulcers that come to operation, a chronicity in large measure due to prolonged unsuccessful medical treatment. It is a remarkable fact that the average duration of symptoms in my experience is about nine years or more. This is also the experience of the Mayo Clinic and of other centres

where large numbers of these ulcers are treated. Since, therefore, few small ulcers are encountered something else must be done to correct the conditions leading to and resulting from the ulceration. This in most instances is effectually accomplished by the operation of gastroenterostomy where there is cicatricial contraction and obstruction of the pylorus. This anastomosis, in its present day perfection, is on the whole satisfactory both as to immediate, interval or end-results.

Coffey makes the statement that gastroenterostomy alone is the best procedure in the treatment of these ulcers. To this I cannot agree. It is questionable how much good gastroenterostomy does in the absence of pyloric obstruction and in the presence of gastric ulcer distal to the pylorus. In the latter instance, to obtain the best results, excision of the ulcer alone, or, if this is not feasible, pylorotomy, subtotal gastrectomy, or circular resection with, as a matter of course, gastroenterostomy, are the procedures of choice. It has been my experience in circular resection for ulcer upon the lesser curvature that with few exceptions is a gastroenterostomy necessary. In a number of circular resections which I have been able to follow, in only one of which have I made a gastroenterostomy, the results have been most satisfactory. If this is true it will be admitted that the operative procedure is simplified. In subtotal gastrectomy, when the stomach is sectioned well to the cardiac end, the Polza operation as modified by Balfour has a useful field. However, there seems to be a tendency at this time to return to the localized treatment as represented by Finney's operation of pyloroplasty. The advocates of this procedure claim that in its actual effects the result is the same as the most radical operation. In other words, the ulceration being the cause and not the result of hyperacidity and hypersecretion, excision of the ulcer removes the local condition, while the pyloroplasty provides for a greater rapidity in the emptying time of the stomach, thus preventing hyperacidity, and moreover leaves the normal

*Read before the Ontario Medical Association, Niagara Falls, Can., June, 1921.

relations of the stomach and duodenum intact. The operation is also considered a simpler and less time-consuming one than gastroenterostomy, though this I believe is entirely a matter of personality which need not be considered here. The conservative nature of the procedure is, of course, greatly in its favor, and taking a so-called ulcer diathesis for granted (that is hyperacidity once established is apt to continue or recur) it is a rational one. But it must be remembered that only about fifty per cent. of cases of gastric and duodenal ulcers present a marked increased acidity before operation.

In contrast to this there seems to be a growing tendency, particularly among European surgeons to resort more and more to radical operation, especially in the treatment of gastric ulcer. No less an authority than Sir Berkeley Moynihan advocates partial gastrectomy as the best surgical treatment for gastric ulcers. The disease, it is generally agreed, is more serious than duodenal ulcer and in view of its inherent possibilities, especially the degeneration into carcinoma, requires "more direct and radical treatment" than is provided by a gastroenterostomy, which he believes, whether its action be physiological or mechanical, "merely produces a condition of things in which healing can more easily take place." Sir Berkeley questions the value of reducing gastric acidity, since, as he puts it, the natural environment of the gastric cell is an acid medium in which it is born, functionates and perishes. The influence of neutralization, is, to say the least, conjectural, and furthermore we do not know whether it is this alone or a combination of circumstances in the treatment that produces the cure. Since 1909 he has performed 96 gastrectomies with 2 deaths, or a mortality of 2.8 per cent., an enviable record which few can hope to equal. During the same period I have used partial gastrectomy on 185 cases with 8 deaths, or 4.32 per cent. mortality. The important thing in choosing the procedure is a proper selection of cases, for these patients with gastric ulcer are usually in a much more depleted condition than those whose symptoms point more or less definitely to duodenal ulcer. Selection then, here more perhaps than elsewhere, is an important factor in securing at least satisfactory immediate results. Among German surgeons also, based on their war experiences, radical operation appears to be the choice. In fact, Finsterer believes partial gastrectomy to be the suitable procedure not only for gastric but for duodenal ulcers as

well, the best results being obtained by resection of at least one-half of the stomach. Not only that, but he does not find it necessary in all cases to excise the ulcer, (?) if, instead of unilateral exclusion one-half or two-thirds of the stomach is resected and the distal gastric lumen is securely closed in front of the pylorus, followed by an end-to-end anastomosis between the partially sutured proximal lumen and the first loop of the jejunum. In Sir Berkeley's experience no recurrence of ulcer took place after the radical operation, which of course also speaks well for the procedure.

In a recent discussion on the treatment of gastric and duodenal ulcers at a meeting of the County Medical Society of Philadelphia (May 26, 1920) I was able to report about 90 per cent. of cures in cases traced for a period of two or three years after operation. In the vast majority of these, in addition to the excision of the ulcer, gastroenterostomy was performed. It is not so much the change in motor activity as in the chemistry of the stomach produced by the operation on which its favorable results depend. Physiologists have demonstrated that there is mainly a reflux of alkaline juices which may continue for several years after the operation, and which interrupts peptic digestion, while protein digestion is taken over by the trypsin in the back-flowing pancreatic juice. These secretions so well substitute the lowered gastric digestion that total metabolism of nitrogen, carbohydrates and fats is little altered by the operation of gastroenterostomy. This entirely accords with the observation that ulcers distal to the pylorus heal with much greater difficulty than those close to the pylorus, since the intestinal fluid hardly reaches all parts of the stomach; at the same time it represents an argument in favor of radical operation in the former type of ulcer. But even when doing a subtotal gastrectomy or a circular resection, I have not found the addition of a gastroenterostomy to give more satisfactory results than when the operation is completed without making the anastomosis, especially in the cases which before operation gave evidence of pronounced hyperacidity and hyperactivity. The fact of the matter is that no single operation is applicable to all types of cases nor even to all cases of the same type. There are so many factors, subjective and objective, to be taken into consideration that the decision what to do cannot be made before operation, and even at the operating table, careful consideration is essential, and even though it means quick thinking it must not imply hasty judgment.

A CLINICAL STUDY OF THE PATHOLOGY OF OSTEOMYELITIS

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CONSIDERABLE attention has been devoted of late to the subject of osteomyelitis, but there are several aspects of the problem that do not yet seem to be clear. On the one hand it is emphasized that inflammation of bone follows the same lines as inflammation of the soft tissues, while on the other hand it is equally important to emphasize that the results of the process are modified by the nature of the tissue in which it occurs. Bone is a tissue that is unfitted by its structure to make a rapid reaction to an acute infection, but it is also a tissue in which the reaction, if efficiently made, may be extremely thorough from the standpoint of defence, but very inadequate from the standpoint of a successful offensive.

It is not sufficiently realized that there are two distinct types of osteomyelitis, which may be distinguished as the juvenile and adult types. The first class comprises cases where the onset of the attack occurs during the growing period, when epiphyses are still present. The second class includes all cases occurring after development of the bony skeleton is complete. Characteristic of the first group is the fact that it practically always occurs—if the lesion be a primary one—on the diaphyseal side of the epiphyseal cartilage, the so-called metaphysis. Characteristic of the adult type is its appearance at any part of any bone. The juvenile type is also characterized by variability in intensity: some cases are fulminating, leading to death of the patient in twenty-four hours; others are of indefinite duration. Cases of the adult type are practically never fulminating and are generally less acute in their course. Considerable controversy has been waged anent the question of a primary periosteal inflammation versus a primary osteomyelitis. Here again the differentiation of type is of some value. In the juvenile variety the infection is almost invariably an osteomyelitis with periostitis secondary. In the adult type a primary periostitis may be met. In bones devoid

of an epiphysis, such as the carpal and most of the tarsal bones, infection may occur at any part of the bone. The striking predilection for the metaphysis was brought home to me by a case which I saw in 1912. A boy aged about 12 was brought in evidently acutely ill with marked swelling, redness and tenderness in the left clavicular area. The region was opened up at once, but no lesion was discovered. Next day the patient died and a post mortem failed to reveal a cause for the condition until the muscles were dissected from the scapula, when a small abscess about the size of a pea was discovered at the root of the coracoid process of the scapula. The coracoid process ossifies from a main centre which appears during the first year of life and joins the body of the scapula about the fifteenth year. Such a case might have been diagnosed before operation had one kept clearly in mind the fact that the coracoid is an epiphysis, and that primary osteomyelitis in children attacks the metaphysis.

One is accustomed to think of osteomyelitis as essentially a disease of children, with no obvious preceding cause apart from a slight injury. I have therefore collected and analysed the cases occurring in our private practice only, during the last few years. Omission has been made of all military cases due to gunshot wound. There are 48 cases, and unfortunately the records are not complete in respect of a good many details.

The average age at which the patient came—or was brought—for consultation was 23 years. The average age of onset of the disease was 17. The youngest was 7½ months, the oldest 64. In the case of one patient the disease had existed from the age of seven, and had remained practically quiescent until the age of 45. As regards the bone affected, of 59 bones affected in the 48 cases, the tibia accounted for 23, the femur for 20, the humerus for 8, the lower jaw 1, first metatarsal 1, ulna 2, middle cuneiform 1, ilium 1,

vertebrae 1, phalanx 1. In one patient four bones were affected, namely, right humerus, left humerus, left femur, left tibia. There is thus shewn a marked predisposition to affect the bones of the lower limb. In the case of the femur, the right was affected nine times, as against eight infections of the left side. In the case of the tibia, there were 15 left as against eight right tibiae affected. This is certainly associated with the greater liability to trauma in the case of the lower extremity. As regards etiology, 24 cases could shew no direct exciting cause, while a number displayed very clearly an antecedent factor.

Causation:

1	Unknown	24
2	Trauma	6
3	Penetrating wound	3
4	Influenza	2
5	Pneumonia	2
6	Physical strain and chill	2
7	Carbuncle	1
8	Septic tooth	1
9	Tonsillitis	1
10	Scratch on foot (tibia)	1
11	Mastoid	1
12	Puerperal sepsis	1
13	B. Coli	1
14	Typhoid fever (?)	1
15	Rheumatism	1

48

Ten cases shewed recurrence in another bone of the body at a later period as shewn:

Name	First Bone Affected	Other Bones Affected	Interval
1 D.C.	right humerus	2nd and 3rd lumbar vertebrae, right femur	10 years
2 W.E.	right femur	left tibia	15 years
3 M.F.	left tibia	right humerus	?
4 T.H.G.	left tibia	right sterno-clavicular joint	3 months
5 F.L.	left humerus	left tibia, right femur	1 year 2 years
6 M.	both femora	left humerus	26 years
7 A.N.	left tibia	phalanx of finger	2 years
8 I.P.	right tibia, left foot	left humerus	3 years
9 J.F.McA.	right tibia	right fibula	13 years
10 G.B.	left tibia	right humerus	4½ years

In regard to mortality five deaths are recorded in the series:

Sex	Age	Bone	Cause of Death
1 F.	7	right femur	empyema
2 M.	30	left tibia	influenza
3 M.	7	right femur	B. coli infection
4 F.	child	left tibia	pus in knee joint, death in 3 days
5 M.	64	left femur	shock

Of these the first and fourth are distinctly associated with the osteomyelitis. In the second case, the influenza was an intercurrent affection. The third case was moribund when seen, a large B. coli abscess being present in the right thigh, the patient having been under observation by a medical man for a good many weeks. The head of the femur was necrotic. The fourth case alone is of the fulminating type, representing a very acute infection in which the patient was doomed from the first. The fifth case is detailed later.

In regard to duration of treatment, it is impossible to furnish figures even approximately accurate. The primary lesion usually can be healed in a time which is generally reckoned in months, but if one regards as incompletely treated any case which returns with local recurrence, then in many instances the treatment lasts years. Again, statistics of duration of treatment are misleading inasmuch as every fulminating case leading to death would improve one's statistics enormously. The general result of enquiry regarding this point is that treatment is a very

prolonged process, so prolonged indeed that one cannot be satisfied with the results.

In considering the pathological anatomy of osteomyelitis, one must consider, separately to some extent, the juvenile and the adult types. Common to both varieties is the presence of organisms, and when once the process of infection is well established, there is no essential difference. In determining the site of incidence one is struck by the overwhelming number of juvenile cases which are juxta-epiphyseal. If a fresh young bone be taken and sufficient force be applied to separate the epiphysis, the epiphyseal cartilage comes with the epiphysis. In other words, a strain is taken up by the tissue, on the diaphyseal side of the epiphyseal plate, i.e., the metaphysis. Here then is the region where small hæmorrhages are apt to occur, where the vague changes grouped as devitalization of tissue resulting from blows or twisting stresses are likely to be present in young bones. Looked at from a pathological standpoint the metaphysis is the region of a long bone, most likely to provide a nidus for organisms. A

further point deserves notice. The observations of Lexer on the blood supply of bones shewed that the nutrient artery after bifurcating passes in multiplying branches toward the epiphyseal cartilage; these fine twigs terminating at the metaphysis in abrupt hair-pin bends. This, then is the region where the blood stream is likely to be slowest, and in consequence a suitable region for organisms to fall out of the stream. We thus have in the metaphyseal region a two-fold chance of infection: (a) the invader; (b) the region invaded. It is not, therefore, surprising that infection occurs somewhat frequently. In adult cases, owing to the absence of the two factors mentioned, the site of infection may be anywhere in the bone.

Now, let us suppose that infection has occurred, what are the possibilities? It is useful to think of the process in military terms.

1. The invader may overwhelm the defender. This corresponds to the fulminating case.

2. The defender may overwhelm the invader. Strictly speaking these cases are not true osteomyelitis. They are the no doubt frequent abortive cases.

3. An equilibrium may be established between invader and defender, a species of trench warfare where after the initial onslaught the host can hold the invader at bay, but cannot annihilate him. This corresponds to the case where the pus which is formed is either spontaneously or surgically evacuated, but the condition does not clear up.

4. The defender may surround the invader, with an impenetrable wall, thus limiting his activity although unable to annihilate his forces. This is the case of the circumscribed bone abscess or Brodie's Abscess.

In the first two cases the contest is short and sharp, the casualties being 100 per cent. on alternate sides. The losses of the host in the second case may be described as molecular death of bone, invisible to the naked eye. The third and fourth groups of cases are the most frequently encountered. Here the losses of the host are larger, visible to the naked eye, resulting in the formation of a sequestrum. Death of bone occurs more readily than death of soft parts, probably mainly because the blood vessels being encased in bony tubes are less susceptible to dilatation and thus reinforcements cannot be rushed to the scene of action so speedily as in the case of soft tissues. Hence, a line of defence is constructed at a point somewhat remote from the scene of the conflict. The bone is rendered

denser, heavier, more resistant to penetration by the organisms or in pathological terminology, "sclerosed." If the zone of defence be sufficiently near to the scene of the fight we have the typical spheroidal bone abscess. If this spheroidal defence be impossible owing to the amount of bone killed at the original onslaught, we have the typical clinical picture associated with the osteomyelitis of adolescence.

This accounts for the two varieties of sequestrum the molecular, which being small is easily dealt with by the osteoclastic scavengers, and the massive, where the process of cleaning up may be extremely prolonged; indeed if surgical aid be not invoked it may last almost indefinitely. There is a third variety of sequestrum which is much less common and which we have called the "lining" sequestrum. This has been found in long bones which are the seat of a chronic osteomyelitis. After the medullary cavity has been opened into, the interior of the shaft is found to be lined by a thin tube of dead white bone, densely hard but easily separable from the underlying compact bone with a mastoid chisel. This lining sequestrum may extend for a variable distance throughout the shaft of the bone. In one case such a lining sequestrum was observed in both humeri and one femur, extending the full length of the shaft, necessitating each bone being laid open from proximal to distal extremity. The explanation of this condition is not very clear. It seems to suggest a primary bone marrow infection with death from toxin of the tube of bone surrounding the marrow.

How long may the organisms exist beleaguered in a bone abscess? As far as we know, they may remain almost indefinitely. One case, aged 24, had a bone abscess in the lower end of the left femur, dating from an attack of typhoid fever at the age of 12. In another case where the abscess was almost but not completely circumscribed it remained closed from the age of seven till the age of 45, a period of 38 years. When organisms are thus enclosed for a prolonged period their pathogenicity seems to become lowered and the abscess is either sterile or tenanted by organisms of low virulence, so that treatment can be modified accordingly.

In regard to prognosis, the study of the cases referred to makes a guarded prognosis essential in respect of both the immediate and the ultimate outlook. The condition is always a serious one. Recovery from the primary attack is almost certain to be a tardy process, and the danger of recurrence either local or remote is considerable.

No.	Name	Age	Sex	Onset Age	Cause	Primary Bone	Bone of Recurrence	Remarks
9	G.W.A.	13½	M.	12½	influenza	left humerus		
2	H.R.B.	28	M.	28	trauma and chill	right tibia		amputation
3	V.B.	9	M.	8½	septic tooth	lower jaw		
4	A.B.	16	M.	16	?	left femur		
5	L.B.	9	M.	8	?	first left metatarsal		
6	D.C.	22	M.	7	pneumonia	right humerus	2nd and 3rd left vert. head of right femur	
7	K.C.		M.		?	left femur		
8	F.B.C.	26	M.	25	trauma	right ulna		
9	C.C.	24	M.	23	penetrating wound	right ulna		
10	C.	24	F.	12	B. typhosus wound	left femur		bone abscess
11	E.R.D.	41	M.	11	trauma ?	right, left femur		accompd. by polyarthritis
12	W.E.	19	F.	?	trauma ?	right femur	left tibia	
13	W.F.	?	M.	?	penetrating wound	left tibia		local recurrence later
14	J.F.	10	M.	10	?	left tibia		
15	M.F.	20	M.	16	strain	left tibia	right humerus	
16	J.G.	47	F.	7	?	left tibia		bone abscess reopened after 38 years empyema, death
17	M.G.	7	F.	7	pneumococcus	right femur		
18	R.J.G.	43	M.	43	trauma and chill	middle cuneiform		
19	T.H.G.	30	M.	28	tonsillitis	left tibia	r. sterno-clavicular joint	death, influenza
20	W.R.G.	16	M.	16	influenza	left tibia		
21	S.H.		M.		?	left tibia		
22	G.H.	8-12	M.	7-12	?	right humerus		
23	R.K.		M.		carbuncle	left tibia		
24	E.L.	30	M.	16	?	left femur		onset 1906; local recurrence 1910, 1913, 1918, 1920
25	F.L.	16	M.	14	?	left humerus	left tibia (2) right femur (2)	
26	H.H.M.	32	F.	18	?	right femur		bone abscess, rt. gt. trochanter
27	J.F.McA.	26	M.	12	?	right tibia	right fibula	amputation advised; has had many operations; death.
28	Mo.	44	M.	44	B. coli	right femur		large black sequestrum removed after 26 years.
29	Mu.	38	F.	12	?	right femur		recurrence 26 years later bone abscess
30	Mi.	41	M.	11	?	both femora	left humerus	
31	Ma.	30	M.	30	?	Left femur		
32	D.N.	7	F.	4	scratch on foot	left tibia	l. index, 1st phal.	
33	P.O.	40	M.	39	?	right tibia		
34	E.P.		F.		?	left tibia	pus in knee	death in 3 days
35	I.P.	16	M.	13	rheumatism	left foot, rt. tibia	left humerus, rt. tibia	
36	S.R.	22	M.	9	cold ?	right tibia		bone abscess; removed. healed in 9 years.
37	Mrs. R.	32	F.	26	mastoid	left humerus, rt. humerus, l. femur, l. tibia		lining sequestra
38	Sl.	15	M.	12½	?	right femur		
39	St.	9	M.		?	right femur		
40	F.T.	14	M.	14	trauma	right humerus		
41	L.T.	17	M.	14	left tibia	left tibia		
42	W.T.					left tibia	left tibia	local recurrence 32 years later procured him pension
43	Mrs. T.	24	F.	24	puerperal infection	left tibia, l. ilium		
44	E.T.	5½	F.	3	?	right tibia		bone abscess
45	H.C.	45	M.	44	compound fracture	right tibia		still under treatment
46	H.E.H.	23	M.	15	trauma	right femur		5 previous operations
47	G.B.	12	F.	8	?	left tibia	right humerus	small sequestrum
48	W.P.R.	64	M.	14	trauma and exposure	left femur		death

Two cases may be cited in a more detailed manner:

1. G. B., female, aged 12, was seen first on July 8, 1916, at the age of eight. Three days before this she had developed pain just below the left knee. The left leg was opened up, pus being present beneath the periosteum throughout the whole length of the tibial shaft, and between the muscle planes. The whole shaft of the tibia

seemed to be dead, and the wound was left open. The condition grew steadily worse. On August 9, 1916, pus was aspirated from the knee joint, a staphylococcus was cultured from the blood and amputation above the knee decided upon as an extreme measure. Two months later the child was able to leave hospital.

In April, 1917, an abscess formed on the stump. It was incised, and healed rapidly.

In January, 1918, a small sequestrum was discharged from the stump.

On December 29, 1920, she reported with a small swelling on the postero-lateral aspect of the right arm just below the axilla. It had been noticed for about one month and seemed to be increasing slowly. An x-ray showed "a small shadow apparently bone or calcareous deposit about the centre of the tumour."

On January 19, 1921, it was decided to explore the "tumour." "It was found to contain a small quantity of pus, a specimen of which was taken for culture, and also a thin shell of sequestrum showed pure culture of staphylococcus aureus."

2. W. P. R., male, aged 64, Broker.

First attack occurred in 1870 at age of 14. Patient was pitching sheaves, the end of the fork resting on the lower end of the left thigh. There was coincident history of exposure to cold and wet. No operation was performed, spontaneous evacuation of pus from the lower end of the left femur occurring. From this time onwards he was lame, using a cane, and always when he became run down generally the wound would break down and discharge.

In 1896 he had an extensive operation undertaken with a view to clearing the condition finally. The wound healed after a year, and remained healed until 1908. At this time he had a very

severe illness complicated by jaundice and hic-cough for two weeks. Amputation was performed at this time at the mid-thigh level. Recovery after operation was slow; for about eight months he had many subcutaneous abscesses, one of which over the right sacral region discharged for one year. After completion of convalescence he was untroubled until April, 1920. At this time he had a good deal of throbbing and pain in the stump, particularly at night. On April 27th it was found necessary to open up the stump. "As soon as the skin was opened, pus spurted out; pus was found oozing from the lower end of the bone. About an inch of the stump was removed with the chisel, a curette was introduced into the medullary cavity and passed up for about six inches." Patient's condition was not improving, and on May 8 disarticulation at the left hip joint was performed. Pus was found in the hip joint. Patient suffered very severely from shock and died about 24 hours later.

These two histories serve to illustrate that a bone infection once incurred is seldom got rid of with certainty. Once an attack of osteo-myelitis has occurred the organisms can entrench themselves and lie latent for years. If there be a local or a general diminution of resistance there is always a possibility of their irruption.

BASIS OF INTRACARDIAC INJECTIONS FOR RESUSCITATION

VOGT distinguishes three forms of intracardiac injection: (1) intrapericardial; (2) intramyocardial, and (3) intraventricular, and says that intraventricular injections are the most effective. He discusses the surgical indications for such injections. They must be given within ten minutes after cardiac standstill. In most of the successful cases they were given within five minutes after respiratory standstill. If the injection is not given promptly, the more sensitive cerebrum cannot recover even though it should be possible to restore the heart beat. Camphor, caffeine, and digitalis preparations do not have a strong enough effect, and may injure the heart tissues. Strophanthin has many good features, but one great disadvantage is that if by accident it is injected intramuscularly, the myocardium

may be badly damaged, for which reason Vogt rejects strophanthin. He states that even Frankel, who introduced it into therapeutics, warns against its intracardiac use, while van den Velden, to whom we owe the idea of intracardiac injections, has given up its use entirely. Preparations of the suprarenal glands are the best remedies; their effect is often little short of miraculous. The maximal dose of 1 c.mm. must not be surpassed. Especial caution is needed in the presence of high blood pressure. Preparations of the pituitary gland are almost as effective as epinephrin, and do not necessitate quite the same caution in administration. A mixture of the two has been tried, but it remains to be seen whether there is any advantage in the combination.—*Jour. A.M. A.*, Aug. 27, 1921.

SYPHILIS, ITS RELATION TO INFANT MORTALITY AND CHILD WELFARE, WITH A DISCUSSION OF PRESENT DAY METHODS FOR ITS CONTROL*

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ANY discussion or statistical survey pertaining to the relation of syphilis to infant mortality would fall woefully short of complete thoroughness and would fail altogether to achieve the desired object—namely, the demonstration of the social and economic loss to the nation resulting from this disease—were it to include only the infant deaths due to syphilis. In order to reach a more accurate conception of the seriousness of the problem I have taken the liberty of using the term infant mortality in a broader application than is customary, and have made it include as well the prenatal destruction of the products of conception. As a matter of fact it is the prenatal ravages of this disease which are the most disastrous. All of us who have been interested in the problem of reconstruction following the war have realized the supreme importance of the conservation of the infant life and we all recognize the ultimate effect on the birth rate of the loss of thousands of Canada's manhood in the war, but how many of us have given more than a passing thought to the birth-rate problem? Added to this there is the universal tendency amongst the married to shirk the expense and responsibilities of parenthood. The present high cost of living is mainly responsible for this state of affairs. To quote actual figures: the birth rate in Toronto dropped from 29.7 per 1000 population in 1914 to 22.6 per 1000 in 1919, and a similar decline was evidenced in the provincial figures. The depletion by war in the number of the country's young men and the high cost of living are factors over which we have no control, but these are by no means the only factors operating in the production of a lowered birth-rate.

Another and a very important one is syphilis,

and this one we are at present capable of controlling, and in the future I hope will control. Just how important it is, is very difficult to put into figures, but an approximate estimate can be made.

In 1920 there were 13,300 births recorded in Toronto and 675 still births. It will be observed that the still-births are approximately 5 per cent. of the live births—a proportion that is fairly constant in every country (1). Few figures of any help in arriving at an estimate of the number of miscarriages are available. They are probably twice as numerous as still births, or 10 per cent. of the total live births—a conservative estimate. The total therefore, for miscarriages and still-births is 15 per cent. of the live births. That this figure cannot be very far astray is shown by statistics given by Adair (2). Of 2773 pregnancies 2422 ended at term and 351 or 14.5 per cent. terminated prematurely. Schwartz (10) found that in 27,711 pregnancies the miscarriages were more than five times as frequent as still births, but the two added together were only 10.56 per cent. of the living births. Accepting the figure 15 per cent. as an average one, there were thus 2000 miscarriages and still births in Toronto in 1920. According to Jeans (5) and others (3, 4) at least 30 per cent. of these are the result of syphilis, giving a figure of 670 as an index of the prenatal ravages due to this disease alone for one year in Toronto. The effect of syphilis in producing sterility need not be considered since it is a doubtful one. This disease may be an important cause of childless marriages but it is not a frequent cause of sterility.

POST-NATAL MORTALITY

In attempting to obtain statistics regarding the number of infant deaths due to syphilis, one is

*Read before the Section of Child Hygiene of the Canadian Public Health Association, May, 1921.

at once confronted with difficulties. Firstly the luetic infection may be, and probably is, only the remote cause of death and frequently for that reason does not appear on the death certificate at all. Secondly, there is a very evident and very pardonable hesitancy on the part of all physicians to enter syphilis as the cause of death on a certificate which is apt to be as one English physician puts it "hawked about among relatives for the delectation of prudes." In Toronto during the past year there were filed only 19 certificates of death for infants under one year on which the diagnosis of syphilis appeared as either a remote or immediate cause of death. It must be obvious to anyone interested in the problem that this figure is absurdly inaccurate and incomplete. Seventeen cases of congenital syphilis died in the wards of the Hospital for Sick Children alone in that year. Out of curiosity I looked up the certified cause of death in these seventeen cases and discovered that in eight or nearly 50 per cent. there was no mention of syphilis. If a hospital interne who has at hand every facility for making an accurate diagnosis, and who in signing the death certificate is independent of the sensibilities of the relatives, fails to furnish an accurate record of death, is it any wonder that remissness is displayed by the general practitioner who is frequently unable to make a definite diagnosis and who is very liable to suffer professionally if he is honest in his certification?

I have arrived at an approximate figure for the infant deaths due to syphilis by an estimate based on statistics of prevalence. Various estimates have been made of the prevalence of this disease among the infant population. Figures obtained from out-patient departments of hospitals on this continent, and admissions to the wards, show a range of from 2 per cent. to 6 per cent. (6). Jeans believes that 5 per cent. of the infant population is syphilitic (1). Of 725 successive admissions to the medical wards of the Hospital for Sick Children, Toronto, 29 or 4 per cent. were proven serologically and clinically to be syphilitic. Since the great majority of deaths due to lues occur in the first few months of life, and the majority of the hospital admissions are over that age, it is probable that considerably more than 4 per cent. of all births are syphilitic. This would mean 665 luetic children born each year in this city, and of these at least 25 per cent. or 166 would die in the first year of life. According to these figures, syphilis would supersede broncho-pneumonia as a cause of infant deaths in the first year and would

take its place beside decomposition, and I am firmly convinced that more accurate death certification would show this to be the case.

A glance at the premature death rate may help to convince the sceptical. There were 305 deaths due to prematurity in this city last year—the largest single factor in the infant mortality. Careful estimates based on serological and post mortem examinations have shown that about 18 per cent. of prematures are syphilitic. (2). Thus here alone we can account for 54 infant deaths due to syphilis or one third of the previous estimate of 166.

TABLE I

Showing estimated wastage due to syphilis in Toronto for one year.

:Registered live-births.....	13300	
:5% of these syphilitic (estimate).....	665	
:25% die in first year.....		166
:Registered still-births.....	670	
:30% syphilitic (estimate).....		223
:Miscarriages (estimate).....	1340	
:30% syphilitic (estimate).....		447
:Wastage due to syphilis—Total.....		836

TABLE II

Showing the wastage in known syphilitic families compared with that in families showing no obvious signs of syphilis. Figures obtained from a variety of sources.

From the Wards and Out-Patient Department of the Hospital for Sick Children, Toronto.

	PER CENT. OF TOTAL PREGNANCIES.				Per ct. of live births
	Miscar. & still births	Prem-atures	Living healthy	Living syphilitic	Died early
Syphilitic families	30.3	2.2	16.6	63.2	30.2
Families showing no obvious signs of syphilis	9.7	0.9	76.0		15.0

CONGENITAL SYPHILIS AND CHILD WELFARE

If a syphilitic infant survives the first twelve months of life there is a much greater chance of his reaching maturity. Approximately 90 per cent. of the deaths due to congenital syphilis occur in the first year. In the United States in 1915 there were 2249 deaths under five years recorded as due to syphilis, and of these 2022 or 90 per cent. occurred in the first year. (7). As a rule the second, third and fourth years are uneventful even in an untreated case. After this time various symptoms and signs—the so-called late or tertiary manifestations of hereditary lues—make their appearance, and it is these manifestations that have an important bearing on the child welfare problem.

It will be seen that the special senses, particularly sight and hearing, the osseous system and the brain are the most frequently attacked. Statistics gathered from various sources show that congenital syphilis is responsible for 31.2 per cent. to 34 per cent. of blindness in children, and for about 17.25 per cent. of acquired deafness (8). It is also an important and frequently unrecognized cause of mental deficiency in children. The frequency of physical deformities due to syphilis may be demonstrated also by a study of a series of cases. During the past 22 months the Hospital for Sick Children has treated in the wards and outpatients' department 127 children suffering from congenital syphilis, and one suffering from the acquired form. Sixty-six of these children were over four years of age, and of these 35 or 53 per cent. have at present or have had interstitial keratitis. In 11 or 16.6 per cent., the sight is permanently impaired. In 4 or 6 per cent., deafness of varying degree is present. Thirteen, or 20 per cent., are mentally deficient, and four of these are partially paralyzed. Twenty-five of the 127 cases have been lost sight of, but of the remaining 102, 26 or 25.5 per cent. died. There are thus 76 cases alive and under observation. Of these, 7 will of necessity become permanent charges on the community as the result of incurable physical or mental defects. Besides the more serious tertiary manifestations already mentioned there are numerous deformities of the bones and joints, such as sabre-shin and arthritis, deformities of the teeth, nose, pharynx and larynx and systemic diseases such as anaemia and malnutrition. In fact of the 66 children over 4 years of age, 47 or 70 per cent. would be marked as physically or mentally sub-standard. When one realizes that at least 5 per cent. of the children of the country are syphilitic, the magnitude of the consequences of the disease will be more thoroughly appreciated.

Apart from the lowering of the physical and mental standard of the child, we must consider also the grave economic losses to the country, which is entailed by the loss of earning capacity and by the sums expended on the treatment, care and education of the more seriously affected.

METHODS OF CONTROL

For convenience sake I have dealt with the solution of the problem under three headings, the control of syphilis in its relation to (a) the birth rate, (b) infant mortality, (c) child welfare.

A. *Birth-rate.*—The two most important factors

for consideration here are firstly the education of infected adults, and secondly, the treatment of pregnant syphilitic women. Consideration of the first factor is intimately bound up with the aims and activities of the Canadian National Council for Combating Venereal Diseases and the question is too large a one to permit of more than a brief discussion in this paper. By proper educational propaganda it is hoped to accomplish:—(1) The prevention of marriage of infected adults until they are pronounced cured by a physician; (2) A realization among syphilitics of the necessity of systematic treatment if they are anxious to have healthy children. Syphilis is responsible for a fairly large per cent. of childless marriages and in a great many of these cases the couple, though anxious to have children, are absolutely ignorant of the true cause of the repeated miscarriages and still-births. Many of them would willingly undergo thorough courses of treatment if they were promised thereby even a reasonable chance of parenthood.

The treatment of the pregnant syphilitic woman is a problem for the prenatal clinics and is one that has a great future. In large centres, such as Toronto, the performance of routine Wassermann reactions on every pregnant woman applying for examination is possible. In the Wassermann positive cases the probability of securing a healthy infant by adequate treatment of the mother during the period of gestation has been frequently and conclusively demonstrated.

B. *Infant mortality.* All that has been touched upon in the previous paragraph applies here with equal force. Added factors must, however, be considered. There is the treatment of the syphilitic infant as soon as symptoms of the disease appear. With the first evidence of snuffles the child should receive intravenous arsenical medication alternated or combined with mercurial inunctions. The earlier treatment is instituted the better is the prognosis. Since specific treatment is beyond the financial means of many individuals, free-treatment clinics are now in operation in many towns in the province. Such clinics being subsidized by the federal and provincial governments. To my mind the maintenance of the child's general nutrition is of even more importance than anti-syphilitic medication. It is therefore essential that the child be kept nursing since by this means only can we avoid the frequent gastro-intestinal and nutritional disturbances which are common to bottle-fed syphilitic infants. Veeder (9) has shown that the mortality for arti-

ficially fed luetic infants is four times as great as for breast-fed ones.

C. *Child welfare.* Under this heading I shall deal mainly with those children who have survived the first year. Recognition by Public Health nurses and by physicians of the tertiary luetic manifestations is of paramount importance if these children are to be referred for treatment. The first step toward this end must be the proper education of nurses during their training and a more thorough teaching of the subject in medical schools. To give you some idea of the results of treatment I have chosen all cases from the special treatment clinic of the Hospital for Sick Children who have been under treatment for a period of more than five months. Such a series, however, gives one no true conception of the mortality of congenital syphilis, since most of the young infants in the secondary stage are admitted directly to the wards of the hospital. As pointed out in the previous paragraph, the mortality for 127 cases was 25.5 per cent. Though this figure may seem unduly large it compares very favorably with figures reported by many other workers in this field. There is every reason to believe that coincident with the more widespread recognition by the laity and the profession of the disease and its seriousness this figure will be materially reduced. I will not attempt to cover the results of treatment as evidenced by the improvement in local lesions such as the eruption, gummatous deposits, periostitis, interstitial keratitis, etc., but will confine the discussion to the results as indicated by the changes in the Wassermann reaction. There are 60 cases in the series who have been under treatment for a period of five months or more. Twelve, or 20 per cent., are apparently cured—that is, have had repeated, consecutive negative Wassermann reactions. Twenty, or 33.3 per cent., are markedly improved, that is, the Wassermann reaction has been reduced to a weakly positive, and in some cases has fluctuated between positive and negative. Twelve cases, or 20 per cent., have been slightly improved, and 16,

or 26.6 per cent., have shown no improvement in the intensity of the Wassermann reaction. One very striking fact about the cases has been that those attending for treatment irregularly have shown little or no progress. Of ten children with whom we have had difficulty in this respect seven have shown no improvement. On the whole the results are very encouraging and particularly so in the young infants where treatment is commenced shortly after the first symptoms appear. Much of the success in the last year has been due to the employment of sodium diarsenol instead of diarsenol and neodiarsenol. The first-named drug seems to be particularly suitable for the treatment of syphilis in infants and children. No reaction of even moderately severe grade has been encountered following its administration during the past ten months, and the effect on the Wassermann reaction has been very satisfactory. My own feeling is that there are few cases of hereditary syphilis which cannot be absolutely cured provided we have the intelligent and interested co-operation of the child or parent.

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REVIEW OF A SEASON'S QUARANTINE STATION WORK

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St. John, N.B.

THE quarantine service is the outer ring of protection for the Dominion against the more acutely infectious diseases. This service is maintained by the federal government through the Department of Health, in conformity with international agreement to which thirty-four countries subscribe.

Canada, through the British consular service, is informed of the prevalence of infectious diseases in epidemic form throughout the world. This information is distributed from Ottawa to the various quarantine officers for their guidance in dealing with vessels coming from these areas. Each vessel also has a bill of health from each port of call on its voyage. The medical officer relies on this history in deciding the action necessary to take should a vessel arrive with obscure or undiagnosed disease on board.

Infectious disease from the quarantine standpoint is divided into two classes, major and minor. The major diseases are such as typhus, smallpox, influenza and plague; the minor as scarlet fever, measles and diphtheria. This classification is subject to regulation at all times. The point is that for the major diseases the passengers of the section or class on board ship in which the disease develops are held at the station for its recognized incubation period. Their clothing and effects and if necessary themselves are subject to measures of disinfection. With the minor diseases only the actual sick and such of the immediate family as it is thought best are held. The expense of those admitted to hospital is borne by the government. The maintenance of the contacts is a charge on the vessel. For these the station furnishes quarters, that is buildings, beds, stoves, light, water and heat. All bedding, utensils, food and service is furnished by the vessel.

In the light of this brief outline of the work of the quarantine service let the station at St. John, N.B., illustrate by its experiences during the past year. Two hundred and twenty-three vessels were inspected, with 62,412 people on board; 117 people were admitted to hospital. There were two deaths, one from encephalitis lethargica and one from smallpox; 151 people were detained as con-

tacts; 224 cases of pediculosis were deloused; 121 specimens were examined in the laboratory, being the usual clinical work from the hospital, including one post mortem. Disinfection of bedding was done for the immigration detention in the city.

A few individual examples will illustrate the problems arising during the performance of this work.

January 23rd, L. D., Italian female, 19 years of age, reported by ship's surgeon as P.U.O., probably measles, of one day's duration; face slightly swollen and flushed, eyes injected, slight coryza. Removed to quarantine hospital. On admission temp. 102, pulse 100. Next day the coryza and swelling of the face had disappeared, the injection of the conjunctivæ had increased, there was no rash or Koplic spots, there was a moderate diarrhoea. The fourth day of the disease (temp. 104) a rash appeared, first on the face, then chest and body, as an erythema, then punctate and slightly hæmorrhagic. Just at this time typhus was reported in New York and the medical officer got busy re-reading its differential diagnosis. A culture of the stool was negative for enteric or dysentery. Microscopical examination showed many living ova of the hookworm *Anklyostomum duodenale*, but no entamæba or cysts and no mucous. Next day the temperature was down to normal and a typical slightly hæmorrhagic measles rash was apparent. If this case had occurred a little later the boat would have been held with all on board until the diagnosis was established.

March 4th, M. P., English female, 17 years of age, reported by ship's surgeon as P.U.O., found to be rather lethargic, face, neck and chest very flushed, conjunctivæ injected, constipated. Since typhus was not present in Buckinghamshire, the county from which she came, the vessel was allowed to proceed. Admitted to hospital, pulse 96, temp. 102. She soon recovered with rest in bed and catharsis, and was discharged with her chart labelled "intestinal toxæmia" for want of a better diagnosis.

December 19, 7 passengers (6 cabin, 1 steerage)

reported by ship's surgeon for delousing. Removed to quarantine with their luggage. Their clothing and effects were placed in the retort of the steam disinfecter. While this was being put through they were given three warm showers, with two thorough soapings in the intervals, dried and then rubbed from head to foot with coal oil, the hair being left saturated and all warned of the danger from fire. Later it was found better to saturate the women's hair with the oil both before and after the bath. The passengers were then returned immediately to the vessel, and on to immigration inspection. The medical officer, nurse and assistants wore loose white coats over their clothes, and the nurse a rubber cap as well. Afterward all went through the same mill, sterilized their clothes and had a bath. It was found by experience that putting on the dry hot clothes fresh from the steam retort made it possible to go out immediately into the cold after the bath without discomfort or danger.

March 26th, steamship wirelessly one case smallpox, arrived midnight of the 27th. The ship surgeon had removed the case immediately on its discovery eight days before, along with the two passengers occupying the same room. He then vaccinated all on board who had not indisputable evidence of very recent successful vaccination. He just finished the day before arrival. The medical officer's instructions were to keep the section involved, repeat all unsuccessful vaccinations, fumigate the quarters and release the ship. His aim was to do this with the least delay and fewest detentions providing a reasonable assurance of safety, keeping in mind the available accommodation of the station. The inspection and vaccination were carried out, 110 people brought ashore with complete supplies, and attendants, the quarters on board ship fumigated with formaldehyde and the ship released in 12 hours.

The patient was a cabin passenger, Russian Jew, 24 years of age, with a very mild attack. He shipped at Antwerp and occupied a cabin in C division of D deck. All the cabins in this section were occupied by central Europeans, all ate at the after dining room and used thereafter lounge and living room. A few passengers who also shipped at Antwerp and spoke better English occupied cabins on C deck above, but ate at the after dining room. The rest of the cabin passengers shipped at Southampton, had quarters on other decks, ate at the forward dining room and used the forward lounge and living room, and were Anglo-Saxon. The patient could not speak English,

and very few of the same section could speak it even brokenly. This distinction of race and language, along with the separation of quarters, was considered sufficient to warrant keeping this section only, the 110 passengers along with their stewards and attendants.

After a week in detention at the quarantine station another case developed in a man 42 years of age. It was of confluent type fatal in four days. The quarantine was then extended for two weeks from the date of his isolation.

At this same time a case developed among those who had been allowed to proceed, a Belgian woman of 32 who had occupied a cabin on C deck but who had shipped at Antwerp and ate at the after dining room. So far no more cases have been heard from. Fortunately this case was in a community where she was promptly isolated and the spread of the disease prevented.

All three cases had good vaccination marks from childhood. The first case had also been vaccinated at Antwerp and the other two cases on board ship, but all too long after exposure to prevent the attack. None had good takes, but slight immediate reactions as described in Rosenau's textbook. Careful inspection of those detained showed that 102 out of 110 or 92.7 per cent. had well-marked old vaccination scars. There were 277, or an average of 2.5 vaccinations performed on each of these passengers, including Antwerp, the boat and the station. Of these, 25 or nine per cent. were frankly successful reactions; 215, or 77.6 per cent., were immediate reactions, and 13.3 per cent. negative. The fact that another case did not develop in quarantine demonstrated that the immediate reaction if performed in time on those with old scars is an evidence of immunity to such a virulent type of smallpox as this evidently was.

The quarantine regulations provide that in circumstances like this the health authorities of the counties or states to which the passengers are going shall be notified. It had fallen into disuse, but will probably be revived.

The aim throughout has been to treat the sick immigrants not as cases only but as human beings, and in so far as the equipment and staff make it possible, not only to protect the country against disease but to befriend these people, to keep the family units unbroken and their slender stock of funds intact. They frequently come to us with weeping and wailing. I have yet to see one of these non-English-speaking foreigners leave without a smile, and without apparently being contented and grateful.

Editorial

THE PREVENTION OF SMALL-POX

DR. WHITELOW has contributed a timely article in this number on the duties of the physician in regard to small-pox, now prevalent in Edmonton. Since the Spanish-American war there have been numerous outbreaks of a mild type of the disease throughout the continent, and although the Edmonton cases are for the most part of a benign character, with a very low mortality, yet they are more severe than some epidemics of recent years. It is an undoubted fact that a severe case may develop from contact with a case so mild as to readily escape recognition, and as the conditions governing a severe and mild epidemic are unknown, it is of the utmost importance to stamp out the malady at its first appearance. Of all epidemic diseases small-pox is the one which can most surely be prevented, and there is no fact more clearly established in medicine than the value of Jenner's discovery in the prevention of the disease.

We would particularly endorse Dr. Whitelaw's recommendation to employ three, or better still four, points of inoculation; insufficient vaccination can only lead to a discredit of the procedure. In

this connection we would quote from an editorial in the *British Medical Journal*: "In the course of the present year there have been reported about 100 cases of small-pox, scattered over a certain area through England. To a greater and greater degree this country is relying on sanitary measures other than vaccination for its protection. How little to be trusted some of these measures are is to be seen in the course of the present outbreaks. They rely for their effectiveness upon early and complete knowledge of the cases occurring; and in the nature of things this is not possible. During the past twenty years primary vaccination of infants has been increasingly neglected in this country, and in that time there has accumulated a large proportion of the population, especially the younger portion of it, wholly unprotected against small-pox. Under such conditions every outbreak of small-pox necessarily creates anxiety, or rather accentuates an anxiety always felt in the knowledge of the continued growth of a danger which the medical profession, despite its warnings, has been powerless to avert."

DEATHS FROM CANCER

THE cancer problem is before us; is knocking at our doors. What can we do to lessen the loss of life from cancer? The death rate from cancer is appalling. During the great war the United States lost about 80,000 soldiers. During the same two years 180,000 people died of cancer in that country. Cancer is now killing one out of every ten persons over forty years of age.

Surgery is doing a good deal. At the onset cancer is a local disease and can generally be removed without danger to life and with promise of no recurrence in a percentage of cases—a percentage that is growing larger as the technique of the operative treatment is perfected. To achieve the best results the disease must be recognized and removed before it has extended to adjacent tissues or to distant parts of the body. Many people are reluctant in seeking advice about growths that are not painful, and cancer is often, may we say unfortunately, insidious in its onset, causing, for a time at least, very little pain or distress.

The American Society for the Control of Cancer is adopting an educational policy. It is trying to impress upon the public the importance of seeking advice at once about growths and lumps and

tumours, that may appear to be harmless. They have an organized staff of paid officials who have issued a considerable quantity of literature during the past year, and are planning to make a great effort to interest the public in the importance and magnitude of the cancer problem during the week beginning the 30th of October.

The Canadian Medical Association at Halifax decided that we in Canada should join forces with the American Society for the Control of Cancer. The medical men of Canada and the Canadian Medical Societies can do a good deal towards awakening general interest in this important matter. There can hardly be a doubt that an awakened sense of the need of early advice and treatment of suspicious growths would save thousands of lives each year.

THE TREATMENT OF DIABETES MELLITUS

UNDER-NUTRITION and total dietary regulation have until recently been regarded as the guiding principles in the treatment of diabetes mellitus. The basis for the belief in these principles has been the accurate and detailed work of Allen. Incontestable clinical evidence of their value is the favourable results the treatment based upon them has had upon the mortality statistics.

Recently Woodyatt (1) reported another method. The principles of this treatment appear to be opposite to those generally accepted in that a high fat diet is employed. The relation between fats and acidosis is definitely established. A detailed analysis, however, shows that

the diet represents a distinct progress in the treatment of this disease.

Both exogenous and endogenous factors are considered in the interpretation of the total metabolism. From this point of view what we have previously considered as under-nutrition is only apparent not real. In spite of prolonged starvation the heat production of the body is fairly constant. The fuel supply under this condition must, therefore, be of an endogenous origin. From a consideration of the chemical metabolism, it appears that in supplying this fuel, which in a marked case of under-nutrition comes chiefly from the protein, more sugar may be produced than can actually be tolerated. On this basis Woodyatt explains the persistent glycosuria found in some cases of prolonged starvation.

(1) Woodyatt, R. T., M.D. Objects and methods of diet adjustment in Diabetes. Arch. Int. Med. vol. 28, No. 2, p. 125, (Aug.) 1921.

A definite advance seems to be the dealing with the food supply in terms of end-products of digestion. Carbohydrates, fats and proteins are considered in terms of glucose and fatty acids. Recognition of this method of considering the diet opens a new field in the study of sugar tolerance. By dealing with the food in the same simple terms the maximum amount of fat which can be metabolised in the presence of the limited amount of glucose tolerated is also calculated. This is pointed out as a valuable aid in determining the severity of the disease. In the presence of a low tolerance for glucose less fat can be given, and therefore, the total caloric value of the diet will be insufficient to maintain life under normal conditions. There is, therefore, in this method no departure from the generally accepted views of the relation between fats and acidosis. It is not a

high fat diet. A certain amount of fat is given which if withheld will be utilized in any event from the body tissues.

Important for further consideration is the assumption that every 100 grams of protein given a diabetic in a diet will yield 58 grams of glucose. Each case, therefore, is regarded as having reached the stage corresponding in experimental work to the complete diabetic as observed in the totally depancreatized or phloridzinized animal. The good results obtained in the case reported by Woodyatt bear out this view. This treatment, therefore, appears to be an advance in the management of the more severe diabetic. Especially those cases in which there is marked emaciation and in which protein forms the chief source of the body energy. Whether it will apply to the milder type of diabetic further studies will show.

THE FINANCING OF HOSPITALS

TO those of us in Canada who are so deeply interested in the financing of our general hospitals, the report just brought in by Lord Cave on hospital financing in the Old Country is exceedingly interesting, in so far as it is the first attempt on the part of the British authorities to rectify the serious financial condition of the English hospital situation of today. Hospital conditions in England have been so entirely different from hospital conditions in the New World that one can find very little in this report of Lord Cave that may be of practical assistance to those of us in Canada. The chief cause of the serious state of affairs in England is not difficult to find. Since their foundation extending back over

hundreds of years, the custom in the large English hospitals has always been to treat every patient free of charge. No effort has at any time been made to investigate the patient's financial status in the community. At the same time it must be said, in all fairness, that the majority of the patients that have filled the wards of hospitals in England in the past could not have paid more than a tithe of the cost of their upkeep. It is probable, however, that a considerable percentage of the patients now occupying their public wards could afford to pay a small portion of the cost of their hospitalization, and one wonders why the English authorities have been so tardy in demanding from such a definite contribution.

While this would be regarded as a great departure from the traditions of the Old World, nevertheless, unless some radical movement along these lines is undertaken, it is doubtful if the Government will come forward and continue to bear the entire cost of the annual deficits.

For several years it has been the practice in Canadian hospitals to make a small charge for the public ward patient in cases in which upon investigation by the social worker such a charge seems warranted. This not only tends to instil into the patient a spirit of independence, as opposed to one of pauperism, but it becomes at the end of the year great assistance to the finances of the hospital. By way of example we may state that in looking over the records of one of our Canadian hospitals we note that in 1917 the revenue from the public wards of that institution was in the neighbourhood of thirty thousand dollars. Little or no effort had been made at that time to collect, where possible, even a small sum from the patients. That hospital was slowly committing financial suicide. With the ever-increasing cost of maintenance it became apparent that some means must be taken whereby the revenue might be increased. An energetic movement was started and each patient's account was carefully scrutinized. The result of this was that in 1920 the revenue from the same public wards was over ninety thousand dollars. By such means the income of many hospitals may be increased, and it is reasonable to think that Governments will be induced to

listen to the pleas of those institutions that are endeavoring to help themselves, and come forward with some plan whereby hospital finances may be placed on a sound basis. Many authorities, however, are of the opinion that the only relief which the future holds for the financial condition of our hospitals is a general per capita tax made on all residents in each city or province, out of which tax assistance shall be rendered to our hospitals on the basis of the quantity and quality of the medical attention given to the poor; while at the same time philanthropic citizens who desire to perpetuate their own name or that of some relative or revered friend will have the opportunity to give or bequeath funds sufficient for the erection of the buildings made necessary by the steady growth of our cities. While the serious financial conditions of the English hospitals are demanding the earnest consideration of all in England, Canadian institutions realize that steps must be taken in advance to prevent this misfortune occurring here. Unfortunately the character of assistance rendered by the provincial and municipal governments has in the past been very uncertain. It is our hope that the time is not far distant when under federal or provincial guidance, financial assistance will be rendered to all accredited hospitals, for surely the supervision of the health of our citizens is quite as important as the upkeep of roads, canals, police and other departments that have become recognized as necessary to the safety and well-being of our country.

THE CASEINS OF COWS' MILK IN THEIR RELATIONS TO INFANT FEEDING

ALTHOUGH the casein of cows' milk and of human milk have been generally thought to be essentially different from one another owing to their differing reaction in the presence of acids and rennin, this view has been questioned, and in a recent paper (*Amer. Jour. Diseases of Children*, August, 1921) Bosworth states that after careful examination he has found that the caseins of the two milks have a similar composition and similar reactions; the two caseins forming the same series of salts with bases. In cows' milk, however, the casein is present as a calcium caseinate, while in human milk it exists as a potassium caseinate. The difference in the character of the curd formed by the action of rennin appears to be due chiefly to the difference in the salt content of the milk. Soluble calcium salts favour coagulation, while the soluble salts of potassium sodium and ammonium tend to check the formation of it. The

development of acidity in cows' milk in the presence of rennin favours coagulation and the greater the acidity, the tougher and firmer the curd. Fresh cows' milk does not curdle on the addition of rennin and may be pasteurized without any coagulation taking place. There is a great difference, however, in the amount of casein present in the two milks. Human milk contains only a small amount of casein and a small percentage of soluble calcium salts, while cows' milk contains more than double the amount of casein formed in human milk, while the salt content is chiefly calcium with only a small amount of sodium and potassium. Owing to this difference in the two milks, human milk coagulates in fine curds in the stomach and passes easily through the pyloric opening, while cows' milk is liable to coagulate in firm tough curds which render passage through the pylorus a difficult matter.

ADVANCES IN PSYCHOLOGY

H. B. BRACKENBURY, in his presidential address, delivered to the Metropolitan Counties Branch of the British Medical Association, recently discussed the advances made in psychology during and since the war. He points out that in no other science has greater advances been made than in medical psychology. A new viewpoint, a new outlook has been established. "Psychology had become not merely the science

of mind, mainly concerned with the analysis of consciousness by the method of introspection, but the science of behaviour, whose subject matter is conduct in general and whose conclusions are based on wider observations and experiment than was formerly considered unquestionably legitimate." "The psychologist is a worker who can predict for us human activity with reasonable certainty, and can formulate laws and

principles whereby men's actions can be controlled by organized society." He discusses the various methods of estimating a person's measurement of attainment; his measurement of intelligence; his measurement of aptitude and his measurement of character.

He points out how valuable the intelligence tests have been in the field of education by grading the children not by their chronological age, but by their mental age, and in picking out the mentally deficient child so that he can be taught according to his abilities. He shows what a wide influence these tests have had in the field of criminology, as well as their great importance in the field of industry. If a person can be examined and placed in a position where he will produce his maximum with the least possible chance of dissatisfaction, what a boon it would be to the heads of industrial plants.

On this continent great strides have been made along the lines of medical psychology in the United States. On this continent, however, the work is not being done by the psychologist, but more by the psychiatrist trained in psychology. This method is thought to be better, because often the psychiatrist who has had a general medical training can detect physical disabilities or signs of endocrine disorders which the psychologist would miss.

Psychiatry, in its modern sense, is not merely a study of "insane" persons, although, unfortunately, as in other branches of medicine, there are patients who are incurable and require simply physical care. Now-a-days psychiatry has taken upon itself the study of all problems which may have a psychological basis. It has interested itself in the study of human behaviour as it affects our whole social and economic life.

Until lately psychiatry was not given

a very prominent place in the medical curriculum of our Medical schools. The reason was that psychiatry was considered merely a study of insane persons who were a danger or a scandal to the community. This old idea of psychiatry is still seen in many of our provincial asylums. Now, however, that psychiatry has taken upon itself the broader study of human behaviour and its relations to all the social problems of the community, there is an increasing demand that our medical graduates be given a more thorough knowledge of this branch of medicine.

In what way then can psychiatry help in the many social problems which are confronting the world today? Its first duty, in order to protect the community, is towards those persons who are mentally abnormal. Some of these patients will of necessity need hospital care and treatment, but it must not be in the old asylum sense. The day of the old custodial type of mental hospital is past (although it has not been abolished in all our provinces). The new mental hospital is conducted more along the lines of a general hospital. Active treatment, research, occupational therapy and social service all form an integral part of the modern mental hospital.

Psychiatry has actively interested itself in education. Today a school system is not complete unless there is a psychiatrist attached to the staff. His duties should be to pick out the mentally defective child, the backward child, the neurotic or psychotic child in the class and advise the best method of educating them, thus preventing the teachers' efforts from being wasted by the presence of such children in the class. Under his guidance special classes will be organized for the training of the different mental types of children, while the supernormal or gifted child will be advised as to the best

method of promoting his talents.

The psychiatrist has also been called upon to help in the fields of criminology. Today he is found in every type of court, assisting the Judge in all difficult cases. This is especially true in the Juvenile Court, where the Judge will not consider passing a sentence upon a child until he or she has been given a thorough psychiatric examination. The Judge Baker Foundation in Boston and the Psychopathic Unit of the Juvenile Court in Chicago are examples where the juvenile delinquent is psychologically studied before the solution is found for the delinquency.

All the different social organizations, no matter whether they are dealing with the child, the unemployed, the unmarried mother or the sex offender are calling upon the psychiatrist to solve their problems. They have all tried to solve these problems from a physical basis, but today they are realizing that the study of a patient's behaviour from a psychological standpoint is a very important part in all these problems. When it is realized that from 60 to 70 per cent. of all cases of illegitimacy, and that from 30 to 40 per cent. of our prostitutes are mentally

abnormal, one sees the importance of a psychiatric examination.

Finally, in the field of industry, the heads of large industrial plants who have been trying to solve the problems of industrial unrest from a physical standpoint are calling upon psychiatrists to tell them why these problems exist. The mental hygiene of industry is attracting a great deal of attention in the United States, and some of the larger industrial plants have had a psychiatrist attached to their medical staff. Very little of this work has been done in Canada, but there are signs, even in our country, that some of our larger corporations are beginning to realize the fact that there is more than a physical basis to the unrest and under-production in their plants.

The importance of this whole movement is so great that our medical graduates must be given the opportunity to acquire a more thorough understanding in the methods of modern psychiatry. The medical curriculum of our schools must be brought up-to-date, and the general practitioner must be given an opportunity to take post-graduate work along these lines if we are to solve the problems of medicine which affect the community.

FOREWORD

ACCORDING to resolution duly presented and unanimously adopted at the last annual meeting of the Canadian Medical Association, held in Halifax in July of this year, an annual membership fee of \$10.00 becomes effective on January 1, 1922.

After very lengthy and deliberate consideration on the part of the Reorganization Committee of the Association, the Executive Committee, the Council, and finally by the Association as a whole,

it became apparent that a national organization such as ours could not hope to continue to function on a \$5.00 fee. The actual production cost of the Journal, supplied to each member, amounts to more than the present annual fee of \$5.00. By consulting the financial statement appearing in the September issue, you will see that the Association, at the present time, is considerably in debt. In order to retire this indebtedness, a bond issue of \$20,000 is being floated, but such an issue

would be entirely a stop-gap of the flimsiest character should the annual fee of \$5.00 continue, as in a very short time the old mill-stone would be again about our necks.

It must be borne in mind that the obligations upon the Association, aside from publishing a meritorious Medical Journal, are many and varied, if the rightful interests of the medical profession throughout the length and breadth of this country are to be advanced. Your Association must carry on a great number of activities on your behalf, and all such activities cost money.

Therefore, please do not think that the annual membership fee is the Journal fee. As a matter of fact, the Journal is being supplied to members gratuitously, as the amount of \$10.00 per member now being requested can be utilized in its entirety for purposes in your interests other than the supplying of a Medical Journal.

It is earnestly hoped that every member will realize his obligation and his duty, and that the \$10.00 fee will be promptly paid when drafts are made upon the members during the coming year.

News Items

ONTARIO

PROCEEDINGS OF ANNUAL MEETING CONCLUDED

Business session of the Association held at 10.00 a.m., Wednesday, June 1, 1921, with one hundred and fifty members present, and the president, Dr. Mullin, in the chair.

Moved by Dr. Secord and seconded by Dr. Farley:

That the minutes of the last meetings of the Association be taken as read. Carried.

Moved by Dr. Malcolm Cameron and seconded by Dr. Powell:

That the complete amended report of the Committee on General Purposes as appearing herewith in the minutes, be received and confirmed — Carried.

Dr. George A. Bingham, Chairman of the Re-organization Committee of the Canadian Medical Association, was called to address the meeting with reference to the re-organization of the parent Association. Dr. Bingham in outlining the re-organization plan, pointed out that the only outstanding point for serious consideration on the part of all the provincial Associations was the decision of (1) the fee which should be quoted by the Canadian Medical Association, and (2) the advisability of a composite fee in the respective Provinces, covering local, provincial and Dominion Associations.

Moved by Dr. Secord and seconded by Dr. Oliver:

That this Association approve of the principle of a composite fee governing membership in the provincial Associations, but that the matter of amount be left in abeyance until some time following the annual meeting of the Canadian Medical Association to be held in Halifax in July, at which time the fee question will be considered and dealt with. —Carried.

Notice of motion by Dr. Secord that the annual fee of the Ontario Medical Association be increased to ten dollars (\$10.00).

The meeting adjourned at 11.00 a.m.

Meeting of the sub-committee on affiliations at 2.30 p.m., Wednesday, June 1st, with the following members of the Committee present: Drs. Argue, Secord, Cruickshank, Longmore, Cameron and Routley.

On motion duly moved and seconded, Dr. Argue was elected Chairman of the Committee, and Dr. Routley, Secretary.

Moved by Dr. Secord and seconded by Dr. Cameron:

That the following applications for affiliation with the Ontario Medical Association be approved and that this recommendation be communicated to the Committee on General Purposes for the approval of that body. —Carried.

Bruce County Medical Society.
 Haliburton County Medical Association.
 Lanark County Medical Society.
 Ontario County Medical Association.
 Norfolk County Medical Society.
 North Bay Medical Society.
 Parry Sound Medical Association.

Moved by Dr. Secord and seconded by Dr. Cameron:

That this Committee recommends to the Committee on General Purposes that the request for affiliation of the Toronto East Medical Association with the Ontario Medical Association be referred to the Academy of Medicine, Toronto, for the necessary permission or otherwise of that body, in accordance with the Constitution and Bylaws, Art. 8. —Carried.

Moved by Dr. Secord and seconded by Dr. Longmore:

That the full report of this Committee on affiliation be communicated to the Committee on General Purposes at its next meeting. —Carried.

Reconvened meeting of the Committee on General Purposes at 10.30 p.m. on Wednesday, June 1, 1921, with forty members of the Committee present.

Following the reading of the report of the sub-committee on affiliations, it was

Moved by Dr. Argue and seconded by Dr. Longmore:

That the report of the sub-committee on affiliations be received and approved, and that the Association be asked to confirm the same. —Carried.

Moved by Dr. Mullin and seconded by Dr. Argue:

That the incoming Board of Directors be instructed to allot the various communications in the hands of this Committee to the respective Committees interested in the subject matter of these various communications. —Carried.

Moved by Dr. Mullin and seconded by Dr. Young:

That a special business meeting of this Association be held in Toronto in the month of December, 1921. —Carried.

Moved by Dr. Mullin and seconded by Dr. Oliver:

That this Committee recommend to the Association the adoption of the Articles embodied in the communication from the Hamilton Medical Society requesting the Federal Government to

adopt special forms to be used by the medical profession in the prescribing of narcotic drugs.

Amendment thereto by Drs. Morgan and Argue:

That this communication be transferred to the Committee on Standardization of Drugs.

The amendment on being put to a vote was declared lost; the original motion upon being put to a vote was declared carried.

Moved by Dr. Crane and seconded by Dr. Mullin:

That the report of the Committee on Inter-relations of the Medical Profession and the Public be received. —Carried.

The report was then considered clause by clause.

Moved by Dr. Marlow and seconded by Dr. Argue:

That clause 14 be not approved, but that this matter should be referred back to the Committee for report at our next annual meeting. —Carried.

Moved by Dr. Henderson and seconded by Dr. Marlow:

That this Committee recommend to the Association that the section of the report dealing with specialists be referred back to the Committee for further consideration and report. —Carried.

Moved by Dr. Henderson and seconded by Dr. Boyce:

That this Committee recommend to the Association that the word "August" in paragraph 9 of the report be changed to read "October." —Carried.

Moved by Dr. Mullin and seconded by Dr. Oliver:

That the report of the sub-committee on Social Service Council be approved. —Carried.

Moved by Dr. Mullin and seconded by Dr. Marlow:

That the complete report of the Committee on Inter-relations of the Medical Profession and the Public as amended by the foregoing resolutions, be now adopted. —Carried.

Moved by Dr. Mullin and seconded by Dr. Oliver:

That the report of the Executive Committee recommending the appointment of a representative of the Ontario Medical Association to the Provincial Board of Health, be not approved. —Carried.

Moved by Dr. Mullin and seconded by Dr. Oliver:

That the amount of money which can be expended by the Directors of the Association as travelling expenses incurred in attending Directors' meetings during the coming year be limited

to a total amount not exceeding one thousand dollars (\$1,000). —Carried.

Amendment thereto by Drs. Marlow and Woods:

That the Committee on General Purposes approve of the principle of meeting the travelling expenses of Directors attending Directors' meetings, and that the Secretary be instructed to keep a record of such expenses during the year.

The mover and seconder of the original resolution by common consent withdrew the same, the amendment thereby becoming the original motion, which, being put to the vote, was carried.

Moved by Dr. Henderson and seconded by Dr. Bingham:

That a hearty vote of thanks be tendered to Dr. Mullin, the retiring President, for the excellent services which he had rendered during the year.

In addition to the glowing tributes which were paid our retiring President by the mover and seconder of this resolution, Drs. Marlow and Primrose in speaking to the motion expressed the sentiments of every individual member of the Association when it was pointed out that the Association owed a deep debt of gratitude to the retiring President for the untiring zeal and energy and personal sacrifice which he had ever shown in advancing the interests of the Association, and that in a very large measure the Association owed to Dr. Mullin credit for its present active and organized condition. The motion was unanimously carried.

Dr. Mullin, in rising to reply, thanked the Committee for the kind expression of appreciation which had been shown him, and also extended to his brother officers and the individual members, his heartiest thanks for the splendid co-operation which he had been shown, on all sides, in conducting the affairs of the Association during the past year.

Moved by Dr. Mullin and seconded by Dr. Primrose:

That each section of the Programme Committee be allotted the sum of \$25.00 as an honorarium for excellent services rendered. —Carried.

Moved by Dr. Mullin and seconded by Dr. Cameron:

That the various items of business appearing in the reports presented to the Committee on General Purposes requiring special resolutions of approval, and not hereinbefore incorporated in the minutes of this Committee, by special resolution be now approved. —Carried.

Dr. Mullin raised the point of remuneration to the Secretary, and called upon the Treasurer to

state if the finances in the Association would permit of an increased salary to the Secretary. The Secretary requested that the matter of increased remuneration be left in abeyance at the present time. The matter was, therefore, not further considered.

The Committee adjourned at 11.45 p.m.

Business session of the Association held on Thursday, June 2nd, at 11.30 a.m., with the President, Dr. Mullin, in the chair.

Moved by Dr. Powell and seconded by Dr. Secord:

That the complete report of the Committee on General Purposes be approved. —Carried.

Moved by Dr. Bingham and seconded by Dr. Malcolm Cameron:

That the report of the Nominating Committee be adopted, the chairman declaring the Officers and Directors to be as hereinbefore listed in the report of the Nominating Committee. —Carried.

The meeting adjourned at 12.00 p.m.

Business session of the Association held on Friday, June 3rd, at 11.30 a.m., with the President in the chair.

The President, in recapitulating the entire meeting, expressed his personal thanks to the various sections and members of the annual meeting committee for the co-operation which they had all shown in making this forty-first annual meeting one of interest and enlightenment to all attending. The President then introduced to the meeting the President-elect for the coming year, Dr. Farley, and also had a few words of praise to say regarding the membership comprising the new Board of Directors. The President-elect, Dr. Farley, in being presented to the meeting appealed to all the members of the Association, and particularly the practitioners of the rural districts, to rally round in an effort to support him and his brother officers to keep pace with the splendid work which had been accomplished by the Association during the past year under the regime of the retiring President, Dr. Mullin.

The meeting adjourned at 11.50 p.m.

Meeting of the Board of Directors held on Thursday, June 2, 1921, at the Clifton Hotel, Niagara Falls, at 2.30 p.m., with the following Directors present: Drs. Farley, Brandon, Oliver,

Young, Boyce, Secord, Argue, McQuade and Routley.

The President in calling the meeting to order expressed his appreciation of the honour which had been conferred upon him, and asked for the hearty support of the members of the Board for the duties of the coming year.

Moved by Dr. Oliver and seconded by Dr. Boyce:

That accounts as presented for payment and O.K.'d by the Chairmen of sections and committees associated with this annual meeting, also bearing the O.K. signature of the Secretary, be paid. —Carried.

The matter of District Counsellor meetings was then discussed, the following suggestions being noted: Dr. Oliver, the second Thursday in September; Dr. Brandon suggested a meeting at Sault Ste. Marie just previous to visiting Fort William; Dr. McQuade suggested the latter part of September; Dr. Brandon suggested the last week in July; Dr. Young suggested the month of December; Dr. Argue suggested the month of January; Dr. Boyce suggested a period some time between October and April, possibly in Brockville; Dr. Secord for Dr. Krupp suggested some time during the first ten days in November; Dr. Burt to be consulted; Dr. Macdonald to be consulted; Dr. Wilson to be consulted.

Moved by Dr. Secord and seconded by Dr. McQuade:

That this skeleton outline of a programme for Counsellor District meetings be forwarded to the Counsellors, and that the Secretary be instructed to communicate with the Counsellors with a view to arranging these meetings. —Carried.

Moved by Dr. Secord and seconded by Dr. Boyce:

That the following be appointed a Committee on Credentials and Medical Ethics:

Dr. J. H. Elliott, Toronto, *Chairman*.
Dr. J. P. Vrooman, Napanee.
Dr. Alex. Thompson, Strathroy.
Dr. R. W. Mann, Toronto.
Dr. F. W. Routley, Maple.

—Carried.

Moved by Dr. Secord and seconded by Dr. Young:

That the following be appointed to the Committee on Public Health:

Dr. J. W. S. McCullough, Toronto, *Chairman*.
Dr. Edgar Brandon, North Bay.
Dr. Edw. Oliver, Fort Willam.

Dr. H. W. Hill, London.

Dr. George Clinton, Belleville.

—Carried.

Moved by Dr. Brandon and seconded by Dr. Argue:

That the following be appointed as the Committee on Medical Legislation and By-laws:

Dr. John Ferguson, Toronto, *Chairman*.
Dr. Geo. A. Bingham, Toronto.
Dr. Geo. E. Wilson, Toronto.
Dr. J. P. Morton, Hamilton.
Dr. Frank C. Neal, Peterborough.
Dr. J. Fenton Argue, Ottawa.
Dr. T. H. Middlebro, Owen Sound.
Dr. H. B. Anderson, Toronto.
Dr. A. Primrose, Toronto.
Dr. Angus McKinnon, Guelph.
Dr. J. W. S. McCullough, Toronto.
Dr. N. A. Powell, Toronto.
Dr. W. T. Connell, Kingston.
Dr. J. H. Mullin, Hamilton.
Dr. Geo. R. Cruickshank, Windsor.
Dr. Geo. S. Young, Toronto.
Dr. F. W. Marlow, Toronto.

—Carried.

Moved by Dr. Oliver and seconded by Dr. McQuade:

That the following be the Committee on Nephrology:

Dr. Frederick C. Harrison, Toronto, *Chairman*.

Dr. J. H. Elliott, Toronto.

—Carried.

Moved by Dr. Secord and seconded by Dr. Boyce:

That the following be appointed as a Committee on Education, with Dr. J. H. Mullin as temporary Chairman, and Dr. T. C. Routley as Secretary:

Dr. A. F. McKenzie, Alliston.
Dr. Fletcher McPhedran, Toronto.
Dr. Robt. T. Noble, Toronto.
Dr. H. B. Anderson, Toronto.
Dr. J. C. Connell, Kingston.
Dr. C. E. Duggan, St. David's.
Dr. J. A. Marquis, Brantford.
Dr. E. W. Hayden, Cobourg.
Dr. Jno. A. Macgregor, London.
Dr. F. W. Marlow, Toronto.
Dr. A. L. Danard, Owen Sound.
Dr. G. Stewart Cameron, Peterborough.
Dr. V. E. Henderson, Toronto.
Dr. Geo. S. Young, Toronto.
Dr. F. J. R. Forster, Stratford.
Dr. J. M. Brodie, Woodstock.
Dr. R. L. Langstaff, Richmond Hill.

Dr. W. A. McIntosh, Simcoe.
 Dr. A. F. Reynar, Palgrave.
 Dr. H. H. Sinclair, Walkerton.
 Dr. J. C. Gillie, Fort William.
 Dr. J. W. Crane, London.
 Dr. L. J. Austin, Kingston.
 Dr. Geo. W. Smith, North Bay.
 Dr. S. N. Davis, Welland.
 Dr. C. H. Bird Gananoque —Carried

Moved by Dr. Argue and seconded by Dr. Secord:

That the following be appointed to the Committee on Inter-relations of the Medical Profession and the Public:

Honorary: Sir Arthur Newsholme, Statistician, Special Lecturer, Johns Hopkins School of Hygiene; Dr. Albert T. Lytle, member Legislative Committee, New York State Medical Society, Buffalo, N.Y.; Dr. Harvey Gaylord, member Legislative Committee, New York State Medical Society, Buffalo, N.Y.; Prof. Gilbert Jackson, Department of Economics, University of Toronto.

Active: Dr. Gordon Bates, Toronto; Dr. W. J. Clarke, Toronto; Dr. J. W. Crane, London; Dr. J. G. Fitzgerald, Toronto; Dr. Charles Hair, Toronto; Dr. J. E. Hett, Kitchener; Dr. H. W. Hill (chairman), London; Dr. F. W. Marlow, Toronto; Dr. J. P. Morton, Hamilton; Dr. J. Heurner Mullin, Hamilton; Gen. A. E. Ross, Kingston; Dr. T. C. Routley (Secretary), Toronto; Dr. John Sheahan, St. Catharines. —Carried.

Moved by Dr. Young and seconded by Dr. Argue:

That the appointments to the Editorial Board be as follows:

Dr. Norman B. Gwyn, Toronto, *Chairman*.

1. *General Medicine*—Dr. J. H. Elliott, Toronto.

2. *General Surgery*—Dr. E. R. Secord, Brantford.

3. *Pediatrics*—Dr. Alan Brown, Toronto.

4. *Therapeutics, Pharmacology and Physio-Chemistry*—Dr. V. E. Henderson, Toronto.

5. *Gynaecology*—Dr. F. W. Marlow, Toronto.

6. *Obstetrics*—Dr. C. W. Mylks, Kingston.

7. *Ophthalmology*—Dr. Frank C. Trebilcock, Toronto.

8. *Nose and Throat*—Dr. Perry Goldsmith, Toronto.

9. *Neurology and Psychiatry*—Dr. Goldwin Howland, Toronto.

10. *Radiology and Physiotherapy*—Dr. G. E. Richards, Toronto.

11. *Pathology, Bacteriology and Immunology*—Dr. J. G. Fitzgerald, Toronto.

12. *Public Health*—Dr. H. W. Hill, Director, Institute of Public Health, London.

13. *Dermatology*—Dr. D. King Smith, Toronto

14. *Editorial Secretary*—Dr. T. C. Routley, Toronto. —Carried.

Moved by Dr. McQuade and seconded by Dr. Brandon:

That the following be appointed as a Committee on Hospital Standardization:

Dr. E. R. Secord, Brantford, *Chairman*.

Dr. A. T. Gillespie, Fort William.

Dr. C. H. Brown, Ottawa.

Dr. Malcolm H. V. Cameron, Toronto.

Dr. W. T. Connell, Kingston.

Dr. J. A. Macgregor, London.

Dr. J. N. E. Brown, Toronto. —Carried.

Moved by Dr. Young and seconded by Dr. McQuade:

That the following be appointed to the Committee on Library matters:

Dr. E. R. Secord, Brantford, *Chairman*.

Dr. J. H. Elliott, Toronto.

Dr. N. A. Powell, Toronto.

Dr. V. E. Henderson, Toronto.

Dr. J. A. Macgregor, London.

Dr. J. W. Crane, London.

Dr. J. C. Connell, Kingston.

Dr. James Miller, Kingston—with power to add. —Carried.

Moved by Dr. Secord and seconded by Dr. Argue:

That the following be appointed as the Committee on the Standardization of Drugs, the Committee being given power to add and also authority to suggest a more appropriate name for the Committee:

Dr. V. E. Henderson, Toronto, *Chairman*.

Dr. W. T. Connell, Kingston.

Dr. J. W. Crane, London.

—Carried.

Moved by Dr. Secord and seconded by Dr. Boyce:

That the following be appointed to the Committee on Mental Hygiene:

Dr. Helen MacMurchy, Ottawa, *Chairman*.

Dr. Clarence Hincks, Toronto.

Dr. Harvey Clare, Toronto. —Carried.

Moved by Dr. McQuade and seconded by Dr. Argue:

That the following be appointed to the Committee on the Venereal Problem, with power to add:

Dr. Charles Hair, Toronto, *Chairman*.

Dr. Gordon Bates, Toronto.

Dr. B. L. Guyatt, Toronto.

Dr. E. B. Hardy, Toronto.

Dr. E. J. Trow, Toronto.

Dr. N. N. Jones, Toronto.

Dr. Williams, London.

Dr. Gunn, London.

—Carried.

Moved by Dr. Argue and seconded by Dr. Oliver:

That the following be appointed to the Committee on the Nursing Problem:

Dr. F. W. Marlow, Toronto, *Chairman*.

Dr. G. S. Cameron, Peterborough.

Dr. A. E. Ross, Kingston.

Dr. W. A. Lewis, Barrie.

Dr. Robert T. Noble, Toronto.

Dr. D. A. Arnott, London.

Dr. D. M. Robertson, Ottawa. —Carried.

Moved by Dr. Brandon and seconded by Dr. Oliver:

That the following be appointed as the Committee on the Liquor Problem:

Dr. Geo. S. Young, Toronto, *Chairman*.

Dr. J. H. Elliott, Toronto.

Dr. R. J. Gardiner, Toronto.

Dr. John Ferguson, Toronto.

Dr. J. P. Morton, Hamilton.

Dr. W. G. Ross, Toronto.

Dr. W. H. Harris, Toronto.

Dr. G. E. Eakins, Port Arthur.

Dr. A. A. Sheppard, Sault Ste. Marie.

Dr. S. R. Deacon, Stratford.

—Carried.

Moved by Dr. Brandon and seconded by Dr. McQuade:

That the three members of the Ontario Medical Association at present on the Joint Advisory Committee be reappointed, and that the Council of the College of Physicians and Surgeons be respectfully requested to receive these gentlemen along with the three representatives of the Council at the next regular meeting of the Council, and that our representatives be instructed to suggest to the Council the advisability of adding to the Joint Advisory Committee one member from each of the Medical Faculties actively engaged in teaching in this Province. —Carried.

Moved by Dr. Boyce and seconded by Dr. McQuade:

That Drs. George S. Young and Robert T. Noble be requested to suggest the names for our Committees on Programme and Arrangements

for our next annual meeting, such names to be placed in the hands of the Directors at a subsequent meeting. —Carried.

Moved by Dr. McQuade and seconded by Dr. Brandon:

That the following gentlemen be appointed as delegates from the Ontario Medical Association to the Canadian Medical Association: Drs. George A. Bingham, J. Fenton Argue, F. W. Marlow and T. C. Routley. —Carried.

Moved by Dr. Brandon and seconded by Dr. Secord:

That the Secretary be authorized to transfer all correspondence to the proper Committees.

—Carried.

Moved by Dr. Argue and seconded by Dr. Oliver:

That action on the request from the Hamilton Medical Society *re* narcotic drugs be delayed for the present. —Carried.

Moved by Dr. Brandon and seconded by Dr. Boyce:

That each Director be requested to keep a record of his travelling expenses to Directors' meetings during the coming year. —Carried.

Moved by Dr. Young and seconded by Dr. McQuade:

That a cheque for twenty-five dollars (\$25.00) be sent to the chairman of each section of this annual meeting with a covering letter from the Secretary stating that this honorarium is voted to cover incidental expenses, etc. —Carried.

Moved by Dr. Brandon and seconded by Dr. Oliver:

That the Secretary be instructed to send the Post Graduate Schedule to the individual practitioners in the Province. —Carried.

Moved by Dr. Brandon and seconded by Dr. Argue:

That the Post Graduate Schedule be held pending the report of the Committee on Education with reference to the grant of five thousand dollars (\$5,000) voted by the Red Cross, and that accompanying each schedule when sent out, there shall be a Red Letter notice additionally incorporating the particulars under which the schedule shall be operated. —Carried.

Moved by Dr. Secord and seconded by Dr. Young:

That the Chairman of the Committee on Interrelations of the Medical Profession and the Public be asked to draft a letter of explanation to accompany the detailed information blank being sent throughout the Province, and that the Secretary

be authorized to take the necessary action in sending out the form. —Carried.

Moved by Dr. Secord and seconded by Dr. Brandon:

That a copy of our Letters Patent and By-laws be sent to the Secretary of each affiliated society, with the explanation that further copies will be supplied individual members upon request.

—Carried

Moved by Dr. Secord and seconded by Dr. Oliver:

That the Secretary be authorized to take the necessary action on all business transacted at this forty-first annual meeting. —Carried.

Moved by Dr. Young and seconded by Dr. Boyce:

That mail ballot be taken by Directors on all important questions upon the direction of the President. —Carried.

The meeting adjourned at 5.15 p.m.

End.

A MEETING of the Ontario Neuro-Psychiatric Association was held at the Ontario Hospital, Mimico, on Friday, September 16th. The sub-joined programme was presented, and it is hoped that some of the papers will appear in subsequent issues. The officers of this active association are Dr. Edward Ryan, President; Dr. Harvey Clare, Vice-President; Dr. C. W. Crawford, Secretary-Treasurer, with an Executive Committee composed of Drs. William English, Goldwin Howland, N. H. Beemer, R. G. Armour and C. K. Clarke. The papers were as follows:—1. "Medico-Legal Evidence in Criminal Cases: Edward Ryan, M.D., Medical Superintendent, the Ontario Hospital, Kingston; discussion introduced by Hon. W. E. Raney, Attorney-General. 2. "Further Extension of Community Interests to Hospital Patients": N. H. Beemer, M.D., Medical Superintendent, the Ontario Hospital, Mimico; discussion introduced by Hon. F. C. Nixon, Provincial Secretary. 3. "The Therapeutics of Sleep in Relation to Disturbed Mental Conditions": R.D. Rudolf, M.D., Professor of Therapeutics, Toronto University; discussion introduced by G. W. Ross, M.D. 4. "Tonsillar and Dental Infection as Factors in Causation of Nervous and Mental Diseases": H. B. Anderson, M.D., late Associate Professor of Medicine, Toronto University; discussion introduced by George Young, M.D. 5. "The Psychoses of Childhood": W. C. Harriman, M.D., Medical Director, Hospital for Feeble-

Minded, Orillia; discussion introduced by A. W. Canfield, M.D..

MEETINGS of the Northumberland and Durham Medical Society were held on September 15th and October 8, 1921. The first meeting was addressed by Dr. John Oille of Toronto, the subject of the discussion being "Blood Pressure." At the second meeting, the procedure took the form of a dinner at which the Society was addressed by Dr. Edward Morgan of Toronto, on the subject of "Some Common Errors in the Diagnosis of Acute Conditions in Infancy."

THE Academy of Medicine of Western Ontario held its first general session of the Society on September 29th, in the Queen Alexandra Sanatorium, Byron, where various phases of pulmonary tuberculosis were presented to a large audience of visiting physicians by Dr. Pretten, Superintendent, and Drs. Moyle, Broome, Andrus and Wilson.

The following week, a post graduate course in tuberculosis diagnosis was given to a number of physicians of western Ontario by the staff of the Sanatorium.

The second general session of the Academy was held in the Medical School, London, on October 7th. The programme was furnished by Dr. Walter E. Dandy, on the Localization and Diagnosis of Inter-cranial Tumours by Pneumography; Dr. Charles F. Neu, Indianapolis, Ind., "Some Phases of Encephalitis Lethargica"; Dr. Robert G. MacRobert, New York, "Fits and Fallacies," a presentation of the subject of epilepsy.

A noon-day luncheon preceded the meeting, and this informal meeting of western Ontario physicians was both a new and popular departure in the proceedings of the Academy.

THE Peel County Medical Association staged the first two meetings of their extensive programme on October 4th and 11th. It is to be hoped that the doctors of Peel County will appreciate the efforts of the President, Dr. Sharp, and the Secretary-Treasurer, Dr. Reynar, for the programme which has been prepared is not only extensive, but is carried on for six meetings. The first meeting was addressed by Dr. T. C. Routley on the work of the Association, by Dr. George S. Young of Toronto on "Goitre," and by Dr. J. W. S. McCullough, Chief Officer of Health, on "The Prevention of Cancer." The

second meeting was preceded by a demonstration of x-ray plates by Dr. Sharp of Brampton, after which "The Prognosis and Treatment of Cardiac Irregularities" was discussed by Dr. Gwyn, and "The Prevention of Diphtheria" by Dr. J. G. FitzGerald, and the meeting closed with a paper by Dr. Perry Goldsmith of Toronto on "The Consideration of the Anatomy of the Faucial Tonsils, Their Surgical Removal and the Management of Their Postoperative Complications." Dr. Goldsmith's paper was illustrated by thirty-five elaborate wall plates. Dr. FitzGerald detailed carefully the present-day results of diphtheria control, illustrated by charts and figures of the Connaught Laboratories and the Ontario Board of Health.

THE opening meeting of the Academy of Medicine, Toronto, took the form of a dinner in the newly-built hall of the Academy on October 4th. The new hall, which by the consent of the Fellows will in future be known as "The Osler Hall," was well filled by an attendance of two hundred and fifty guests who listened with pleasure to the presidential address by Dr. Robert Noble, who dealt artistically with the subject of "The Standing of the General Practitioner," illustrating his remarks with portraits of the well-known figures of Toronto's medical past. Short addresses followed by Dr. H. B. Anderson, Chairman of the Financial Committee; Dr. E. E. King, Chairman of the Building Committee, describing the project which resulted in the building of the new hall and the means taken to carry it through. The Secretary's report put before the Fellows the excellent work of the past year and the hopes for the ensuing session. Addresses were also given by the President of the University of Toronto, Sir Robert Falconer; the Rev. Dr. Cody, and by Justice Riddell. A further description of the new building and the plans connected therewith will be given in a later issue.

THE County of Peel Medical Association met in Brampton on Oct. 18th, when the following programme was presented: Dr. B. P. Watson, Toronto, "Obstetrical Injuries and their after results, with especial reference to prevention;" Dr. R. R. McClenahan, member of the Provincial Board of Health, subject, "Public Health Aspects of Venereal Diseases," with moving pictures; Dr. Harvey Clare, Superintendent the Ontario Hospital, subject, "Medical Jurisprudence;" Dr. E.

Stanley Ryerson, Toronto, subject, "The Pathology of the Gall Bladder and Bile Ducts and its relation to the clinical manifestations of disease and the surgical treatment indicated"; Dr. J. G. Cunningham, member of the Provincial Board of Health, subject "Occupational Diseases."; Dr. R. V. B. Shier, Toronto, "Surgical Post-Operative Treatment."

DURING the week of October 30th-November 6th, the Cancer Prevention Commission of the United States and Canada held a special meeting for the purposes of general instruction in the recognition and handling of this world-wide scourge. Special addresses of particular interest to the medical profession were made by Dr. Harvey Gaylord and Dr. Schreiner of the New York State Institute for Cancer Research.

ON November 7th, Colonel McCarrison of the R.A.M.C. addressed the Academy of Medicine, Toronto, on the subject of "Diet and its Relations to Diseases of the Thyroid Gland."

THE Section of Obstetrics of the Academy of Medicine, Toronto, met on October 6th; Section of Ophthalmology and Othology on October 10th; Medicine on October 11th; Surgery on October 18th, and Pediatrics on October 20th. The Section of Pathology held its opening session on Tuesday evening, 25th. An excellent attendance was on hand to welcome the opening address of this section, given by Dr. Magner, the newly-appointed pathologist of St. Michael's Hospital. An excellent presentation of the subject "Detoxicated Vaccines" was given, and followed by a careful discussion by those in Toronto most interested in this particular branch of pathology.

ON November 8th, a combined meeting of medical and pathological sections of the Academy of Medicine, Toronto, took place in the Osler Hall. The subject of "Encephalitis Lethargica" in its many attitudes was taken up by Professor Boyd of Winnipeg, whose work on the subject has already appeared as one of the most interesting publications bearing on the matter. Other phases of this epidemic, which has been quietly going through the community for the last three years, were presented by members of the profession in Toronto who have seen the disease in its clinical and pathological sides.

On November 4th, the Western Academy of Medicine held its meeting in London. An extensive programme was presented, including a clinic by Dr. L. F. Barker of Johns Hopkins Hospital, Baltimore.

It is earnestly asked that all county societies holding meetings through the year, will send in their programmes to the editor of the Ontario section. If received in time, the Journal will cheerfully advertise these meetings, either in the "News Items" column or elsewhere, as may seem fit if many notices are sent in. It is also requested that a full report of all meetings be forwarded. The development of this phase of medical education in Ontario within the last few years has been remarkable to a degree, and every encouragement will be given to every society wishing to make use of these columns.

THE Faculty of Medicine, University of Toronto, furnishes the following details:

The Board of Governors have appointed Dr. Clarence L. Starr to be Professor of Surgery and Head of the Department of Surgery, to date from July 1, 1921.

They have also appointed Dr. George D. Porter special lecturer on Health Education for two years from July 1, 1921.

Dr. J. B. Collip is to be Assistant Professor of Pathological Chemistry.

Dr. Donald Fraser is to be Assistant Professor of Hygiene and Preventive Medicine.

A short graduate course will again be given this year from December 18th to December 24th. The one held last winter was attended by 45 physicians and was considered a great success.

The Faculty have determined to institute a graduate course leading to a diploma of Radiology. The course will extend over one winter session of eight months, during which laboratory and practical work in Physics and Radiology will be carried on. Details as to the date when applications will be received will be announced later.

The registration of students for this year is as follows: First year, 143; Second year, 190; third year six, 145; third year five, 211; fourth year, 224; fifth year, 159; total, 1,072.

DISTRICT No. 2 medical meeting, comprising the Counties of Brant, Waterloo, Wellington, Oxford, Perth, Huron and Norfolk, was held in

Woodstock on the afternoon and evening of Wednesday, October 5th, 1921, under the auspices of the Oxford County Medical Society. During the afternoon session which was presided over by Dr. Sutherland, Vice-President of the local Medical Society, the following programme was presented: "Operative Treatment of Fractures—end results as contrasted with those of other means," Dr. E. R. Secord, Brantford; "Review of Blood Pressure," Dr. William Goldie, Toronto; "Medical Side of Tuberculosis Problem as it Affects the General Practitioner," Dr. Charles White, Pittsburg; "Acute Abdominal Emergencies," Dr. Herbert Bruce, Toronto. Supper was served at 6.00 p.m. by the ladies of Knox Church in the banquet hall beneath the place of meeting, and most enjoyable indeed was the repast which was provided. Due to the absence of the President of the Association, Dr. E. R. Secord, First Vice-President, outlined some of the aims and objects of the Association, and was followed by Dr. T. C. Routley, Secretary of the Ontario Medical Association, who recounted some of the activities which had been carried on by the Association during the past year. The attendance was over one hundred. The papers and discussion which followed were interesting and instructive. The meeting was undoubtedly one of the best district meetings which has ever been held in the Province. An eight o'clock adjournment made it possible for all present to reach home at a reasonable hour.

A DISTRICT medical meeting of the Counties of Peterborough, Victoria, Durham, Northumberland, Hastings, Prince Edward and Haliburton, was held in the city of Peterborough on Wednesday, September 21, 1921, under the auspices of the Peterborough Medical Society. The meeting was called to order at 2.30 p.m. by Dr. Joseph Morgan, President of the local Society, with about fifty doctors in the district present. Dr. Morgan in extending a welcome to the profession, turned the meeting over to the chairmanship of Dr. E. A. McQuade, of Trenton, Counsellor of the District.

During the afternoon the following programme was presented: "Cardiac Murmurs," Dr. J. M. McCulloch, Peterborough; "Disorders Peculiar to the New-Born Child," Dr. A. C. Kindred, Tweed; "Pain in Appendicitis," Dr. F. P. McNulty, Peterborough; "Physical Therapy," Dr. N. F. Sutton, Peterborough; "Results Following Removal of Portion of Tibia After Injury,"

Dr. A. S. Tilley, Bowmanville; "Cystitis and Allied Causes of Frequency," Dr. R. A. McComb, Toronto; "Organization Progress in Ontario and the other Provinces," Dr. T. C. Routley, Toronto.

Particularly worthy of note was the very free discussion which followed every paper, practically every man present having something of interest to say during the progress of the meeting.

An excellent banquet was served at 7.00 p.m., and was followed by a splendid talk from Dr. F. J. Farley of Trenton, President of the Ontario Medical Association. Dr. Farley referred to the activities which had been in progress during the past few weeks by way of visits to many parts of the Province, and in his own inimitable manner impressed upon the gathering the need

for closer co-operation and greater organization of the profession.

The address of the evening was given by Dr. F. W. Marlow, of Toronto, his subject being "The Diagnosis and Treatment of Some Gynaecological Conditions"

The meeting adjourned at midnight after a very successful and profitable session.

DR. JAMES THIRD, of Kingston, Ont., sailed last month for Bermuda, where he will spend the winter. His many friends, not only in Kingston but throughout the Dominion, will hope that he may be able to return and resume his work with the coming of the warm weather next spring.

NOVA SCOTIA

At the last session of the Legislature of Nova Scotia three bills were enacted which are intended to procure betterment of certain social problems which are by no means restricted to the province by the sea. One of these authorizes the provincial government to establish an institution for the care and education of the feeble minded; the second provides for the creation of two hospital centres and other institutions for the treatment and care of the insane; while the third makes provision for prison farms along modern lines. The legislation was inspired by the report on a mental hygiene survey of the province recently conducted by the Canadian National Committee for Mental Hygiene. The developments which will follow upon the enactments will be watched with interest by those who realize the need for better insti-

tutional provision for those belonging to the several groups, for whose benefit the legislation has been designed. The provincial hospital for the insane, now being operated near Halifax, compares very favourably with similar institutions elsewhere, but many of the chronic cases of insanity are housed in county asylums, most of which are not well conducted. Except for a small, though very excellent, institution at Halifax, there is no accommodation for the feeble minded other than that afforded in county asylums, where no training is attempted. Few of the county gaols have facilities for the employment of prisoners. There is, therefore, plenty of opportunity for improving upon present conditions in respect of the care of persons of these types in "Bluenose Land."

QUEBEC

THE first annual conference of the Canadian National Council on Child Welfare was held in Montreal at the Windsor Hotel on September 29th. and 30th. 1921. This national organization (the fourth to receive official recognition by the Federal Department of Health) was organized in 1920 and is composed of voluntary associations engaged in the several phases of Child Welfare

throughout Canada. This first conference must be regarded as a distinct success, and was attended by delegates from every province. An important address in the Health Section was delivered by Miss Sally Lucas Jean, Director of the Child Health Organization of America, who spoke on 'Health, Strength and Joy for Canada's School Children,' and demonstrated what busi-

ness ability and indomitable energy can do in safeguarding the health of children. In this health crusade, efforts must be concentrated on the formation of "health habits" in the child rather than on the presentation of academic information about hygiene or physiology. Dr. W. A. L. Styles, Executive Secretary of the Child Welfare Association of Montreal, read a paper bearing on "The Child Health Train in Quebec." This first-in-Canada Child Health train during the past summer visited 37 communities, covering over 1100 miles of an itinerary. The staff was composed of two physicians, three nurses and three social workers, and occupied two railroad coaches suitably remodelled and equipped, the generous loan of the C.P.R. The roads over which it ran generously gave free haulage. The work carried on by this train was under the direct control of the Child Welfare Association of Montreal, and received the endorsement of Quebec Provincial Red Cross, and Social Service Departments of Montreal and McGill Universities. At all the small towns and villages at which it stopped, addresses were made and methods shown for the proper hygiene and feeding of infants, a matter on which much ignorance is still prevalent. The 1920 infant mortality rate of Quebec Province (16.2 per cent.) although

lower than it was in the past, is unduly high, and surpasses the illegitimate infant mortality in Great Britain. Dr. W. W. Chipman presented an interesting paper entitled "The Infant Soldier," in which he took occasion to introduce much common sense bearing upon certain prevailing society fads, which he said represented the superstitions of the past regarding public health and safety. Miss Mary Power of the Child Hygiene Bureau, Ontario Department of Health, in speaking on "The Government Health Clinic of Ontario", detailed miscellaneous activities of the Bureau, whose annual budget amounts to \$40,000. Dr. Ruggles George, Canadian Red Cross Society, Toronto, emphasized the importance of "Milk as a Vital Food Product." Miss Eunice Dyke, Department of Health, Toronto, described in detail the methods employed in the public schools of Toronto for the removal of physical defects. The six sessions of the Conference were well attended, and were presided over by Hon. L. A. David, Secretary of State of the Quebec Government, and by Dr. Helen MacMurchy, Federal Health Department, Ottawa. All papers read at the Conference are being printed in "Social Worker," which may be obtained upon application from Miss Charlotte Whitton, Confederation Life Bldg., Toronto.

MANITOBA

THE Manitoba Medical Association holds its annual meeting in Winnipeg on November 9th, 10th and 11th. An extensive programme has been arranged. In addition to the usual presentation of papers, full opportunity will be given to its members to discuss medical problems of both professional and Association interest. A question box has been instituted. It is desired to divide the province into a number of districts, each of which may have its own active medical society, and be in relation to the Association. The Secretary of the Canadian Medical Association will visit Manitoba at the invitation of the Executive Committee, and will give the benefit of his experience to assist in this organization. In this manner the executive hopes to keep in touch more intimately than in the past with all members of the profession in the province.

THE increasing prevalence of cancer in Manitoba is calling forth united measures for drawing attention to methods of prevention. In this work the Public Health Board, and Provincial Public Health Department have the co-operation of the Medical Health Officer for Winnipeg, the President of the Manitoba Medical Association, and Dr. R. J. Blanchard. The Government will probably be requested to provide pamphlets suitable for the education of the public, and it is planned to distribute this literature at meetings to be addressed by physicians in various localities. In this connection, suitable statistical material and other information will be furnished to all medical men in the province.

THREE hundred students are registered in the Faculty of Medicine for the session 1921-22, and

of these 110 are in the freshman class. The equivalent of one year's arts work in the pre-medical sciences will be demanded before the completion of matriculation in medicine. One of the new buildings made available by the Rockefeller gift is now in use, and houses the Departments of Physiology, Biochemistry, and Bacteriology. A second unit was begun in August, and will probably be ready in February to accommodate the Department of Pathology. Dr. V. H. K. Moorhouse of Toronto, who was appointed to the Chair in Physiology in sequence to Dr. Swale Vincent (now Professor of that subject at Middlesex Hospital, London), has taken up his duties.

THE first annual meeting of the Manitoba Hospital Association will be held in Winnipeg on November 7th and 8th, prior to the annual meeting of the Manitoba Medical Association, so as to facilitate a large attendance of members. In addition to ample opportunity for a round table discussion on hospital problems, the programme includes consideration of the following subjects: hospital finances, legislation and government aid to hospitals, hospital accounting and purchasing, nursing problems and affiliation of training schools. Dr. George Stephens will address the convention on "The Modern Hospital and its Community Relations." The application of the minimum standard will be the chief subject of discussion in a paper entitled "The Professional Work of the Hospital" by Dr. James McKenty. City hospitals will be inspected, hospital equipment exhibited, and officers elected for the coming year.

THE first case in which an irregular practitioner has been tried under the Manitoba Medical Act has resulted in a conviction. The complainant, who was suffering from amyotrophic lateral sclerosis, received treatment from a chiropractor, and brought his action in the interest of poor people whom he considered were being deceived by the defendant. The case was brought under section 78 of the Act, for treating or professing to treat whilst not being a licensed practitioner under the Act.

THE Northwest Manitoba Medical Society: Meetings of this society have been carried on most actively and successfully during the past season. Dr. G. S. Fahrni addressed a meeting at Virden on September 15th on the subject of "Goitre," and Dr. Charles Hunter on "Neurosis." Clinical cases were shown by Doctors Clingan, Ross and Fryer. Dr. M. C. O'Brien, the Secretary, was the speaker at a public meeting held in the evening, and two films of general health interest, lent by the Medical Health Officer of Winnipeg, were shown to a large audience.

GROUP clinical meetings are now held at regular and frequent intervals by the following Winnipeg Hospitals: St. Boniface, Children's, Winnipeg General, Misericordia, and Victoria.

DR. HUBERT KITCHEN of Souris, who graduated in medicine this year, has been appointed to a fellowship in the Rockefeller Foundation, and will investigate problems in metabolism at the Mayo Medical School, Rochester, Minn.

A REPORT recently issued by the Provincial Psychiatrist contains interesting reading. The total admissions for the previous year to the three institutions was 69. The work of the psychopathic clinic in Winnipeg has proved very successful in securing early treatment for patients, a very important factor in mental cases. The facilities for admission to the clinic are appreciated by those to whom the formalities customary in mental hospitals are objectionable, and so often accentuate the distress of relatives and friends. Of 199 patients discharged from this one institution, 48 were reported as completely recovered, 137 improved, and only 14 unimproved. There were 62 deaths. Reorganization of the hospital service at Brandon, and Selkirk, has been ably undertaken by Dr. C. A. Barager and Dr. E. C. Barnes respectively. Proper housing facilities for nurses have been inadequate, and depleted staffs have been the result. A school for feeble-minded has been started at Portage la Prairie. It is hoped to establish mental clinics throughout the province during the coming year.

ALBERTA

THE new wing of the Royal Alexandra Hospital, which exclusive of equipment will cost approximately \$275,000, is now nearing completion and will be opened about January, 1922. The hospital will then have accommodation for 250 patients, and will have all modern facilities for giving the best service possible, surgical, medical and maternity. A medical superintendent will shortly be appointed, for which position applications are now being requested. Since the resignation of Dr. Fyshe last December, the position has been vacant, but the near completion of the new wing and the increased accommodation for patients thereby secured has made the appointment of such an official very advisable. A training school for nurses, of whom there are about 45 maintained. This hospital has been built and is financed entirely as a city hospital.

The recently completed extension to the General Hospital includes a nursing home for the nurses, rooms for x-ray equipment, a laboratory and maternity wards, and is a splendid addition of four storeys which would be a credit to any hospital. It has been erected at a cost of over \$100,000 and increases the available accommodation to 175 beds. The facilities provided for the treatment of all classes of patients, surgical, medical and maternity, are excellent. This hospital is conducted under the management of the Grey Nuns, and was the first hospital enterprise established in Edmonton, the nucleus of the present hospital having been built in 1895. A

training school for nurses is also carried on with about 60 nurses in training at the present.

The Strathcona Hospital, near the University of Alberta, is a well-equipped and fully modern institution erected as a City Hospital at a cost of \$300,000, which has been placed at the disposal of the S.C.R. for the care and treatment of sick and disabled soldiers. There are at the present time about 150 patients under treatment in it. It is likely that it will be required for this purpose for some time to come.

The Misericordia Hospital conducted by the Sisters of Misericordia is a modern building with complete equipment for the comfort and convenience of patients. Only the southern part of the hospital, as designed, has yet been erected. The capacity of this wing is 75 patients. Nurses to the number of 18 are taking the course of training provided at this hospital.

The Isolation Hospital, which includes a detached building for the cure of patients suffering from smallpox, with a capacity of 90 beds, is the only hospital in Edmonton which does not attain to modern standards as regards the building and accommodation. For some years the need of a new hospital has been acutely felt and it is anticipated that something will be done in the near future to provide a new and complete hospital for infectious disease.

The total bed capacity for the Edmonton hospitals, including the Isolation Hospital, at the end of 1921 will be approximately 750 beds.

BRITISH COLUMBIA

THE Board of Trade of Vancouver has established a health bureau as one of its sections. This section meets twice a month and exists for the purpose of educating the general public in public health and medical problems. It is the intention to give a regular course of lectures or talks on these matters.

THE Vancouver Medical Association will begin its regular meetings for its twenty-third session

on October 10th under the presidency of Dr. F. P. Patterson. The other executive officers are Dr. J. J. Mason as vice-president and Dr. L. Mac-Millan as secretary.

The pathological and physiological section of the Association has anticipated the parent society and already held two meetings. This section was formed last year for the purpose of studying the scientific aspect of medicine as opposed to the severely practical, and sufficient interest in its meetings was manifested to justify its continued

existence. Last year an important subject for discussion was acidosis, and this year already a very comprehensive study of the kidney and its function is under way.

Among the notable activities of the University of British Columbia of interest to medical men is a class of eighteen nurses, who are following a

course in public health, ten of which are in receipt of scholarships from the Victorian Order of Nurses. Dr. R. H. Mullin is the professor, and has as his associate Miss Mary Ard Mackenzie. Drs. Carder, Wightman, Dobson and Vrooman also render voluntary assistance in this department.

GENERAL

NOTES on child welfare work in Austria by the American Red Cross Society have been received. In these the statement is made that the Society has taken over 100 child welfare stations which were about to close from lack of funds, and has guaranteed financial support for a period of one year. Austria was a pioneer in scientific child health work before the war. At that time stations were established in many parts of the country, in which children were weighed, measured and carefully examined by competent physicians. The nurse in charge of each station was expected to visit the homes of the most needy of the attending children. After the war the appalling condition of the children was such that many foreign agencies came forward with assistance, and rations for the destitute, worked out by experts in child feeding, were supplied gratis to a

large extent. In addition, owing to the lack of trained workers, a short practical course was given to all the nurses under careful organization. Great work has been accomplished not only in Vienna, but throughout all Austria.

100,000 COPIES

THE January issue of the Medical Review of Reviews is to be sent as a New Year's gift to practically every physician in the United States and Canada. This issue will be one of the most valuable which has ever been prepared and we trust that the physicians who receive this number will read it with interest and profit.

We congratulate the Medical Review of Reviews on this progressive move and trust they will meet with success in a great undertaking.

Abstracts from Current Literature

SURGERY

The Postural or so-called Static Deformities.

BANKART, A. S. BLUNDELL: Brit. M. J. April 23-30, 1921.

In speaking of scoliosis Mr. Bankart introduces some interesting theories. He maintains that an ordinary scoliosis is due, not to muscular weakness, but to deficiency of the habitual subconscious state of reflex activity which normally maintains the upright attitude, which latter he terms the postural reflex. Hence exercises are only one of the means to the end that the patient's postural reflex may become a habit. Corrective jackets or spinal supports are indicated only when the

curve is not held in check by active treatment by exercises. As regards the cause of scoliosis, it is pointed out that the upright position of the body is maintained by continuous reflex muscular activity, controlled by a special nervous mechanism of its own. Hence faulty posture suggests faults in this nervous mechanism, associated possibly with labyrinthine, cortical, or cerebellar influence. Abnormal postures thus are primarily nervous or mental in origin, are in fact functional nervous disorders, associated with mental fatigue or inertia. The frequent association of scoliosis with neurasthenia was pointed out twenty years ago by Oppenheim. The fixation of a spine once curved is of the nature of a functional contracture

of the muscles of the concave side. In other words there is a lack of the normal lengthening impulses to those contracted muscles which, as physiologists are agreed, accompany shortening impulses to the antagonistic muscles. Hence the rapid fixation of the deformity.

In discussing flat-foot Mr. Bankart points out that the arch of the foot is supported, not by continuous strain on the ligaments, but by muscular activity, continuous and reflex. It is not the function of ligaments to withstand continuous strain, this is the function of muscles. There is a postural reflex acting in the feet, by which the tendency to passive abduction and eversion by the body weight is continuously resisted by movements of adduction and inversion.

Mental fatigue or inertia, anæmia, constipation, adenoids, all have a place in the etiology of flat-foot as in that of scoliosis. The postural reflex may be exhausted by continuous strain of standing or may be inhibited by some painful condition of the foot itself, e.g., sprain, gonorrhœa.

The treatment is (1) to restore the natural form of the foot if possible; (2) to relieve the postural muscles from strain during the period of recovery; and (3) to re-establish the postural reflex. A rigid foot needs to be made supple; a forcibly abducted foot needs to be straightened. Rigid arch supports are irrational, and tilting the boot is not efficient, as the whole foot slips to the outside. A moulded insole, with depressions for the points of support, gives the best results.

J. A. NUTTER

Stoffel's Operation for Spastic Paralysis, with report of thirty-two cases.

G. A. BRUCE *Am. Orthop. Surg.*, Feb. 1921, Vol. 3, p. 52.

REFERENCE is made to Adolf Stoffel's paper "The Treatment of Spastic Contractures" in the *American Journal of Orthopædic Surgery*, May, 1913, Vol. X., No. 4, describing the method of peripheral neurectomy of motor nerves.

Patients (usually children) with spastic paralysis often show mental deficiency. They learn to walk late, owing to spastic contractures of the legs, principally abduction of the thighs, flexion of the knees, and plantar flexion of the feet. Treatment of such deformities has been largely by tenotomies and tendon transfers, with over correction in plaster of Paris. It is to be remembered that in these cases the element of spasticity far over-shadows the element of paraly-

sis. The normal balance between antagonistic muscle groups is under cerebral control, but in spastic paralysis this control has been more or less lost, and the more powerful muscles overcome and practically obliterate their weaker antagonists. By the Stoffel operation of excision of portions of motor nerves the spastic or over-powerful muscles are weakened until muscle equilibrium has been established. How much of the nerve should be resected is a matter of judgement, as it is better to remove too little than too much. The technique is then described for resecting portions of the median, obturator, sciatic and internal popliteal nerves for typical deformities. In the case of the median (it being assured that pronation and flexion contractures have occurred) a certain amount of paralysis is produced in the muscles of pronation and in the flexors of the wrist and fingers. An analogous procedure is followed out in connection with adduction deformity at the hip, flexion deformity at the knee, etc.

Stoffel in his after treatment always uses over correction and fixation. This is used by Dr. Gill only in resistant cases where even under an anæsthetic, force is necessary to overcome the deformity. Excellent results are described, and case reports are given.

J. A. NUTTER.

Report of a Case of Loose Osteocartilaginous Bodies in the Knee Joint. BLANCO, PIO. *Am. Jour. Orthop. Surg.*, March, 1921.

The case reported is thought to be one of osteochondritis dissicans, and the coincidence of thyroid disturbance gave it additional interest.

It concerns a woman of 35 whose knee, following injury, became swollen and painful and locked at times. Focal infection was present to a marked extent in the tonsils, to a mild extent in the teeth. The knees were normal in appearance but possessed leathery crepitus and restricted motion. X-rays shewed marked loss of substance, particularly in the condyles of both femurs. On operation loose pieces, mainly cartilaginous but containing some bone, were removed. The operation did not improve the range of motion of the knees, though the locking disappeared. Removal of the diseased tonsils was followed by a septic reaction in which the knees did not participate. The patient had had the superior thyroid arteries tied off for hyperthyroidism 11 years before, and at time of operation was suffering from hypothyroidism.

J. A. NUTTER

Anterior Bow-Legs. BLANCHARD, WALLACE:
Am. Jour. Orthop. Surg., Jan., 1921, Vol. 3.

ANTERIOR bent tibia is seldom exclusively an anterior deformity except in the earliest stage, for the reason that as the deformity progresses it usually goes to one side or the other in the direction of the least resistance. Cases of ordinary degree of deformity are treated first by transverse tenotomy of the tendo Achillis, following which, the tibia and fibula are fractured laterally at the point of greatest deformity by the Grattan osteoclast. This is done even when the deformity is near a joint. The legs are then straightened by the hands and put up in plaster of Paris. In six weeks the child is walking. In extreme cases where the anterior bowing shortens the leg by one-half it is evident that the nerves, blood vessels, etc., will not stretch sufficiently to permit of full correction at one sitting. In such cases osteoclasis is done at different levels every three or four months, accompanied by tenotomy of the tendo achillis. In this way the soft parts are allowed to stretch gradually. In the correction of knock-knees accompanied by anterior bent tibiae the correction of the knee deformity frequently neutralizes the bent tibiae. Care must be taken not to operate before the rickets has run its course, for fear of non-union.

J. A. NUTTER

Restoration of Shoulder Function in Cases of Loss of Head and Upper Portion of Humerus. ALBEE, FRED. H.: Surg. Gynæc. and Obst., Jan., 1921, Vol. 32, p. 1.

ALBEE divides the cases of flail shoulder joint into two groups. In the first group the muscles about the shoulder are capable of being used. Here a portion of the fibula is grafted into the humeral shaft, the muscles attached to the graft either individually or en masse, according to their condition for use.

In the second group damage to the shoulder muscles has been so great that restoration of joint motion is impossible. Here an arthrodesis of the shoulder is done by making a trellis-work of tibial bone grafts. Bony union is expected, and the muscles moving the scapula provide useful movement for the arm.

Interesting case reports are given, where the flail condition was due both to neoplasm and to compound fracture.

J. A. NUTTER.

MEDICINE

Some Causative Factors of Pulmonary Tuberculosis. BROWN, LAWRASON, Amer. Rev. of Tuberc., Aug., 1921, p. 518.

There is only one fact about the whole problem of pulmonary tuberculosis concerning which all authorities are in accord, namely, that pulmonary tuberculosis is due always to the presence of tubercle bacilli in the lungs.

Perhaps a second incontrovertible fact is that a large proportion of urban population harbours the tubercle bacillus by the time they reach puberty.

One must separate as clearly as possible those causative factors that bring about infection from those that bring about the development of infection into clinical disease. The danger of tuberculous meat is practically nil, but the danger of milk containing bovine tubercle bacilli is more real. The bovine tubercle is the cause of 24 per cent. of cases of tuberculosis under 16 years of age or of 4.3 per cent. of pulmonary tuberculosis in children under five years of age, but of less than one per cent. of the total number of cases of pulmonary tuberculosis. The mutation of the bovine to the human type of bacillus has never been proved, so that, as far as adults are concerned, the human type of bacillus alone is of practical importance. Little is known about the existence of the human tubercle bacillus outside the body. When tuberculous sputum become dried and ground into dust out-of-doors the bacilli are so weakened that they are of little danger. House dust on the other hand is much more dangerous. Virulent tubercle bacilli have been found in the dust of a room six weeks after the death of a consumptive, but usually at the end of six months all infectivity has gone. It cannot be denied that droplets of sputum scattered when a tuberculous patient coughs may contain tubercle bacilli, and may be deposited three or four feet from the patient, but the bacilli are readily exposed to the destroying influences of light, air, and drying, and it is unlikely that they persist alive or infectious for more than a few hours. While direct contact with the patient, except in the form of kissing, utensils, and house-flies, are possible forms of transmission they are not common, but hand-to-mouth infection is probably far more common than hitherto recognized. That but one case of tuberculosis has developed in any of the employees at the Trudeau

Sanitarium during the 36 years of its existence indicates how purely theoretical such danger is. The resistance of the host to the tubercle bacillus and the accidental location of the disease has unquestionably more to do with the type of disease than variations in virulence. The number of bacilli on the other hand has a marked influence on the disease; no one is so immune that a sufficiently large number of tubercle bacilli will not produce infection and ultimate disease. Children are practically all susceptible to tuberculosis and cannot be guarded too carefully against infection. A tuberculous mother should never nurse or handle her child. While the number of children infected increases with age up to puberty, the mortality decreases. It is impossible at present to determine to which type of tubercle bacilli the majority of infections in early childhood are due, so that protection of the very young against tuberculous milk must be very strict. The claim that the early infection with the bovine type immunizes against pulmonary tuberculosis in adult life, is too far from being proved to permit us to view with equanimity bovine tuberculosis in young children. Heredity may be of some importance. The inheritance of certain physical peculiarities cannot be denied and it is possible that after infection certain inherited characteristics may lead on the one side to increased and on the other to lessened resistance. Race has unquestionably some relationship to the mortality from pulmonary tuberculosis. Whether re-infection occurs from within or without is a much-disputed point. Of all natural methods of infection, that by inhalation requires the smallest dose and is very often the direct source of infection. Adult pulmonary tuberculosis is almost always situated at the periphery where inhalation infection would explain it, while childhood infection, most often arises around the roots of the lungs. Inhalation infection requires far fewer tubercle bacilli than ingestion and it seems possible that sooner or later all of us breathe tubercle bacilli into our lungs. Most of these inhalation infections do not "take," that is, develop into disease, but sooner or later some do, and the resulting pulmonary tuberculosis is due to this secondary infection occurring from without in adult life. Re-infection after puberty is then the essential factor in at least 50 per cent. of all adult pulmonary tuberculosis infection: the development of this infection into definite clinical pulmonary tuberculosis may be due to any debilitating factor.

D. GRANT CAMPBELL

Streptococcus Hæmolyticus Empyæma. JOHN-

STON, JAMES I.: Amer. Jour. Med. Sci., August, 1921, p. 206.

THE author deals with this condition from the internist's point of view. He brings out the fact that during the recent large epidemics of influenza, empyæma was not a common complication, but that in the subsequent minor epidemics an undue proportion of pleural effusions have occurred.

A large number of these effusions have been shown to be caused by the streptococcus hæmolyticus; in such cases the characteristic feature has been that the effusion has occurred as a complication rather than a sequel of the acute pulmonary infection. He considers that in these cases the effusion is a purulent one from the start and he recommends frequent aspirations at two or three day intervals until the acute stage is over, when surgical interference may be more safely sought.

There is rapid improvement subsequent to the first aspiration and out of proportion to the amount withdrawn, an increased high-pitched vocal resonance has been found of more assistance than any other sign in determining the presence of fluid even though the quantity be very small in amount. The fluid at the first aspiration is ordinarily amber colored, but with each succeeding tapping becomes darker and more purulent, and when the pus has assumed a chocolate appearance rib resection is indicated.

His results with this plan of procedure have been very gratifying.

D. GRANT CAMPBELL

Asthma and Allied Disorders—Discussion on Opening Paper. ROLLESTON, SIR HUMPHREY: Brit. Med. Jour., Aug. 13, 1921.

THE writer classifies with asthma, as definite members of the group of toxic idiopathies, hay fever, urticaria, angioneurotic œdema, Henoch's purpura, eczema and acute dermatitis, while doubtful examples include migraine, epilepsy, cyclic vomiting and gout.

He sets himself to answer the question, "Are we in a position to exclude a reflex explanation of some cases of asthma and to consider that they are all due to hyper-sensitiveness?" He considers that heredity is much more often present than available figures indicate and that the more marked the hereditary influence the earlier in life

the manifestation of sensibility. It is open to discussion whether in man sensitization is acquired in the absence of a transmitted tendency that has been latent until stimulated into a specific hypersensitiveness. Age has a very distinct influence on sensibility to skin tests. In infancy and childhood foods are mainly responsible for asthma; in early adult life emanations from horses and other animals come to the fore, and in later life bacterial infection is the main initial cause. The skin tests have very considerable limitations although they offer the best means of diagnosis of protein sensibility at present available. Treatment is classified in three groups: (1) prophylactic, (2) specific, (3) non-specific.

The specific he feels is always satisfactory in cases of pollen fever, if carried out in advance of the season. Patients sensitive to the protein of animal hair such as horse dandruff, cat, dog or cow hair, or feathers are readily desensitized by subcutaneous injection of the protein, whereas patients sensitive to food proteins do not respond satisfactorily to this line of treatment. Exclusion of the offending foods from the diet is the only beneficial treatment. Vaccine treatment is satisfactory only when truly specific and in properly selected cases.

As a non-specific form of treatment it seems clear that peptone may act as a desensitizer. It may be given intramuscularly (especially in children) or intravenously or by mouth. In the use of peptone it is unnecessary to determine by skin tests the exact protein that is the antigen. The injections are given slowly so as to avoid any reactions.

D. GRANT CAMPBELL

PEDIATRICS

Nutritional Keratomalacia in Infants (4 Cases). Ross, S. G.: Amer. Jour. Dis. Child., Sept., 1921.

KERATOMALACIA was defined by de Schweinitz as ulceration of the cornea with xerosis of the conjunctiva. The word is synonymous with xerophthalmia, but as the most typical changes occur in the cornea, the former is the term of choice.

Ross reports four cases on account of the light thrown recently on the etiology of this disease. Only four cases were observed in the Johns Hopkins Hospital among 28,000 admissions in 30 years, but Ross recognized two in the past year.

These four infants were from 3 to 6 months old and all showed:

1. Artificial feeding (condensed milk in all).
2. Extreme progressive malnutrition.
3. Hyperleukocytosis (30000).
4. Obstinate vomiting and diarrhoea.
5. Ulceration of the cornea.

Etiology. MacKenzie (1857) first noted the relation between corneal ulceration and malnutrition in infants. This relation was fully confirmed later, but etiologically this condition was not separated from that complicating many acute infections, smallpox, scarlet fever, typhoid, etc. Bacteriological tests have proven indefinite. Only in this century has the relation of special dietary factors to this disease been studied. Mori (1904) in Japan observed 116 cases, in all of which the food consisted practically entirely of cereals and vegetables. Cod liver oil proved a specific and Mori concluded the cause was lack of fat in the diet.

Czerny and Keller described a malnutrition resulting from a diet of carbohydrates and noted that keratomalacia was a frequent complication. They believed lack of fat and possibly of protein in the food was the cause. In much of the recent research in connection with vitamins, not only arrested growth but wasting and xerophthalmia were observed in rats. The eye lesions were cured by "fat-soluble A" vitamin (cod liver oil, butter, fat, etc.).

Bloch in Denmark in 1916 carefully studied 40 cases in which fats were almost absent from the food and he concluded that lack of the "fat soluble A" vitamin was the cause. He divided thirty-two healthy children into two groups of sixteen each. In group I eight cases of xerosis occurred, group II. remaining free from the disease. The diets were similar, but while oatmeal and rusks were given to group I., some whole milk was given only to group II., the only fat given both groups apart from this whole milk being margarine. Thus a human experiment en masse was carried out. The fat in the whole milk given had evidently protected group II. The treatment was at once curative and consisted of cold liver oil without change of diet.

The dietary history in Ross' cases is clear cut, all four children being fed on condensed milk, a food high in carbohydrate and very low in fat and protein. Probably we have in condensed milk a food inadequate in the "fat soluble A" factor.

Pathology. In none of Ross' cases was there a

histological study of the eyes. Dotsch has described the histology in two cases. The conjunctival epithelium shows thickening in all layers, especially near the corneal limbus. The cells of the superficial layer were flattened and their nuclei stained poorly. Moderate leukocytic infiltration of the epithelial layer and submucous tissue was present. The cornea was ulcerated and microscopically the ulcers were seen filled with pus cells, fibrin and necrotic material. Surrounding the ulcers was a dense leukocytic infiltration. The corneal epithelium in contrast to the conjunctival showed no increase in the depth of its cell layers. Indeed, near the ulcers it had disappeared.

Friese and others found similar changes in rats. Many observers agree that the lesions result from a secondary infection due to a lowered resistance of the tissues.

McCollum and others have been unable to produce these lesions experimentally by the removal of any dietary factors other than "fat soluble A" and the lesion is always curable in rats by the addition of this substance.

Symptoms. The usual history in the infant is artificial feeding of low fat mixtures with excessive carbohydrates. In Ross' four cases the food in all was condensed milk, which has these characteristics. In older children too a marked lack of fat has been noted. Vomiting and diarrhoea hasten the malnutrition and the skin becomes dry and scaly. Hypertoxicity of the muscles may appear with retraction of the head and stiffness of the limbs. These children are very prone to secondary affections, bronchitis, broncho-pneumonia, rhino-pharyngitis, otitis, pyelitis, furunculosis. Eye symptoms develop late, the first change being dryness of the conjunctiva with loss of the glistening. Injection of vessels follows and the cornea is then attacked, especially in the lower half, which finally ulcerates and perforates with hypopyon and prolapse of the iris. A purulent inflammation of the eyes generally develops.

Prognosis. The prognosis is grave, but improves above the age of one year. The patient generally dies from nutritional disturbance and the eye lesion is an index that this is far advanced. In one of Ross' fatal cases the eyes healed under cod liver oil. The late appearance of keratomalacia makes it difficult to recognize the disease early.

Treatment. The chief indication is to give the child sufficient animal fat containing the "fat soluble A" factor. Breast milk is the ideal

food. Cod liver oil should be begun at once.

Summary. The type of nutritional disturbance is accompanied by a keratomalacia quite separate from the eye lesions found in infectious diseases and from other causes. It corresponds closely with "mehlnahrschaden" as first described by Czerny. Clinically and histologically this keratomalacia is very similar to the eye lesions produced experimentally in rats by a diet lacking in "fat soluble A" factor. The weight of evidence would tend to show that the human cases result from a lack of the same substance. If so, this nutritional keratomalacia in infants is the manifestation of a definite deficiency disease in the sense in which we now understand the term.

F. M. FRY.

The Role of Fatigue in the Malnutrition of Children. VEEDER, BORDEN S.: *Jour. A. M. A.*, Sept. 3, 1921.

The author is struck with the lack of stress laid on fatigue as a cause of this condition. The usual causes are said to be unhygienic conditions of living, poverty, overcrowding, etc., together with faulty dietetics. He finds that simply outlining diets and prescribing the ordinary amount of rest are not sufficient as a rule to improve the complaint, even when the unhygienic living conditions are corrected and the diseased tonsils and carious teeth are removed.

The child cannot maintain the sustained period of effort that the adult does but the sum total of the brief periods of violent exercise are much greater than the adult's day's work. When the child fails to relax between these violent efforts or when he has insufficient sleep at night his nutrition is bound to suffer. The strenuous exercise with the hard study of the school child are sufficient to cause trouble when combined with the social life so commonly adopted by the American child.

He cites cases illustrating this point and showing how the difficulty was overcome. One intractable case was put on the correct path back to health by being kept in bed for six weeks following on an acute illness. Exercises were subsequently supervised with a resultant gain of 12 pounds within the year.

A. B. CHANDLER

Comparative X-Ray Studies of the Size of the Heart in Healthy and Sick Infants.

LANGE, R., and FELDMAN, H.: *Monatschr.* Aug., 1921.

By means of direct x-ray examinations of the chests of a large series of infants and by making comparative measurements of the height of the diaphragm, the transverse diameter of the heart and that of the lungs, Lange and Feldman were able to arrive at a quotient by which to estimate the comparative size of the heart in health and disease. The method used was that described by Altstaedt in the *Deutsch Med. Woch.*, 1919, No. 30.

They observed that in normal infants the transverse diameter of the heart to that of the lungs was as 1 is to 2, and that the height of the diaphragm had no influence upon the size of the heart. In normal new-born infants the heart was found to be comparatively small. Fifty-five per cent. of infants with exudative diathesis showed enlargement, while there was definite diminution of the size of the heart in infants with acute toxic intestinal disturbances. In chronic intestinal disorders, while some infants were found to have hearts of normal size, others were found with distinctly small hearts. These gradually became normal in size with the improvement in the general condition. Small hearts were demonstrated in a series of infants with pertussis.

A. GOLDBLOOM

Treatment of Acute Poliomyelitis with Immune Horse Serum. ROSENOW, EDWARD C.: *Jour. A. M. A.*, Aug. 20, 1921.

Rosenow reports the results of treating 259 patients suffering from this disease. Each was given intravenous or intramuscular injections of his horse serum. The latter was prepared by repeated injections of increasing doses of freshly isolated strains of the pleomorphic streptococcus.

The good effects at the bedside were proportionate to the earliness of the injection. The improvement occurred with such regularity and in such marked degree when given in the pre-paralytic or early paralytic stages, as to exclude accidental occurrence. In these stages the death rate was nil, and the residual paralyses very low, in fact there were no residual paralyses when the serum was given in the pre-paralytic stage.

The serum must be given within 48 hours of the appearance of paralysis to have a decided value. Every hour of waiting after the onset of paralysis lowers the chances of complete recovery.

A. B. CHANDLER

Book Reviews

GENERAL PATHOLOGY: AN INTRODUCTION TO THE STUDY OF MEDICINE. By Horst Oertel, Strathcona Professor of Pathology and Director of the Pathological Museum and Laboratories of McGill University, and of the Royal Victoria Hospital, Montreal, Canada. New York: Paul B. Hoeber, 1921; pp. 357; price \$5.00.

According to the author, this small book of about 350 pages is a "discussion of the development of the nature and processes of disease." The viewpoint is further outlined in the following terms by the writer of the book: "Pathology must be approached within the frame of modern biology . . . the history of a science is an essential part of it, and should be presented not as a simple recital of sequences but in the bearing and influence which one step of thought exerts upon

the next . . . great emphasis has been put on the anatomic, histological, formal side from the dynamic standpoint."

The work is divided into two books, the first consisting of a discussion of etiology and the second of pathological anatomy, histology and pathogenesis. The first book is again subdivided into Part I. and II. Part I. contains sections 1 and 2 in the first of which bacteria and infection are dealt with; in the next are considered physical and chemical factors as the cause of disease. Part II. of book one is given over to the treatment of disposition and idiosyncrasy and heredity. Book II., consisting of about 160 pages, is devoted to pathological anatomy, histology and pathogenesis.

The historical treatment of the subject is on the whole quite good. There is, however, a conspicuous exception to this statement on p. 112 that: "our knowledge of acquired immunity was

like all scientific knowledge originally—purely empirical.' The first observations were made by a country schoolmaster, Plett, near Kiel on the Baltic, who noticed that persons who had acquired cowpox became immune to smallpox. According to this, Edward Jenner has received more than his due reward from posterity and the German schoolmaster scant justice! The statement on p. 135 that "this acid agglutination (of Michaelis) is quite specific for bacteria" has not been borne out by much recent work.

There are a considerable number of typographical errors, as for example "erysipelatos" on p. 21, and "isotoxine" on p. 59.

The designations of bacterial species is not in harmony with that in use in recent bacteriological text books; and in general, the space devoted to bacteriology is too inadequate to render the book of any considerable value to the student of that subject, but too extended, possibly, for a book of general pathology. The same is true of the sections dealing with immunity. The most valuable work of Dale and of Weil on anaphylaxis is not even mentioned. Botulinus toxin and tetanus toxin are not similar in action, as is suggested in a foot note on p. 46. The mode of transmission is not clearly indicated and the importance of the flea as the insect vector is not pointed out. Tetanus toxin used for the immunization of horses for the production of tetanus antitoxin is not in practically any serum laboratories treated with iodine bichloride before being injected.

On the whole, this little book is in need of careful and extensive revision before the appearance of the next edition.

J. G. F.

CREATIVE CHEMISTRY. Edwin E. Slosson. p. 308. Illustrations 38; 8vo. Century Co., New York, 1921.

This fascinating and characteristically American book gives a vivid description to the lay reader of the achievements of modern chemistry. Doubtless it will go far to convince the American reader of the need for the protection of chemical industries in times of peace, of the importance of not wasting the by-products of industry and of the vast sums that can be made and saved by the work of the chemist in manufactures, agriculture and the arts. The author's mind is filled with the literature of the ages; he quotes Virgil, Shakespeare and Tennyson, but his American sense of humour leads him to introduce the slang phrase

and the quotation, often in a fashion that is amusing because unexpected. The man who knows no chemistry is carried along in the wondrous story, is shown how the knowledge of chemistry saved Germany for years from defeat, how the opportunities and handicaps of the war made the United States for the first time thoroughly recognize the capital importance of chemistry, and the necessity of cultivating this science if it is to preserve its "place in the sun." What he says is true of Canada as well. Our farmers must employ more fertilizers, our manufacturers must save waste products to supply some of them, our miners will find the minerals needed and our chemists must be trained to direct the process. For the practitioner it is unfortunate that the author does not write a chapter on the "created" drugs, the product of chemical research, but there is enough of interest in this volume to recommend it to every one, be he patient or doctor.

V. E. H.

A TREATISE ON FRACTURES in General, Industrial, and Military Practice by John B. Roberts, A.M. M.D., F.A.C.S., Emeritus Professor of Surgery in the University of Pennsylvania Graduate School of Medicine, and James A. Kelly, A.M., M.D., Associate Professor of Surgery in the University of Pennsylvania Graduate School of Medicine. Second edition revised and entirely reset. Octavo, 764 p., with 1081 illustrations, radiograms, drawings, and photographs. Cloth \$9.00: J. B. Lippincott Company, Philadelphia and London.

This volume is, in a general way, a very excellent presentation of the fracture problem by men of wide experience, and may be accepted with a few exceptions as a safe guide to the treatment of one of the most important groups of cases with which the medical practitioner is called upon to deal.

The experience of the Great War has markedly emphasized the importance of proper methods of treatment, and has given a decided impetus to the study of fractures in general. Many of the newer methods that have been evolved by that experience are given due mention by the authors.

The illustrations are numerous and effective, but some of the x-ray prints might be improved upon.

Dr Roberts has always leaned towards conservatism in the treatment of fractures, but he admits that in some instances operative methods

are indicated, and that then "perfect reduction and coaptation of the fracture surfaces should be performed by exposure of the line of break under thoroughly aseptic precautions by men trained to do this class of surgery."

One is rather surprised to note that after fully describing the advantages of the hyperflexed and fully supinated position for fractures at or about the elbow-joint in children, the authors then advise that the hand may be allowed to rest over the sterno-clavicular articulation of the opposite side. Again, one feels that sufficient stress is not laid on the advantages or necessity of anaesthesia in the reduction of "Colles" fracture.

It is somewhat of a pity, at least from the standpoint of Canadian readers, that a very excellent volume should be marred by a spirit of narrow provincialism which rather seeks to deprecate the work of others especially of English surgeons. For instance, the remark "It is probable that British surgeons had until the recent war obtained poorer results in the non-operative treatment of fractures than was the case in the United States" is a rare bit of impertinence. In discussing the statistics of operative as contrasted with non-operative methods, the statement is made "that a mortality of 57 in 11,946 cases (treated operatively) would be terrifying." Just where the "terror" comes in is difficult to see when it is acknowledged that in 11,946 cases treated non-operatively 129 died.

Whatever opinions one may have as to the methods evolved by Lane, he certainly should be given credit for a great stimulation to the study of fractures. Numerous "x-rays" showing the after-results of operative treatment by steel plates are given, and in each instance it is carefully explained that "Sherman's plates" were used.

Finally, most readers will be surprised to learn that "The injury Colles of Dublin described is in truth not a fracture of the lower end of the radius at all, but occurs in the lower part of the shaft. The term Colles Fracture should be discarded." This is in startling contrast to the dignified statement of Dr. Lewis A. Stimson: "Mr. Colles published his brief but accurate account of the fracture in 1814. He had never had an opportunity to dissect a specimen of the fracture, and speaks on y o the symptoms and treatment."

E R. S.

HYGIENE FOR HEALTH VISITORS, SCHOOL NURSES AND SOCIAL WORKERS. By C. W. Hutt, M.A., M.B., (Cantab.) D.P.H. (Oxon.); M.O.H.

Metropolitan Borough of Holbourn, Second edition, revised and enlarged; 382 pages and 83 illustrations, with index. Methuen & Co., Ltd., London. Cloth, 12s. 6d.

"Intended to assist women training for public health posts and those carrying out voluntary public health work," says the cover announcement. Although entitled Hygiene, Dr. Hutt's chapter headings show as subjects, physiology (extremely condensed), food, clothing, personal hygiene, water, ventilation, warming, lighting, disposal of refuse, dwellings, school buildings, foetal and infant mortality, supervision of midwives, care of infants and children, common ailments of school children, prevention of communicable diseases, elements of home nursing, first aid, duties of health visitors and school nurses, institutions of use to workers, useful sanitary legal knowledge, vital statistics (half a page), cancer (two pages), and advice to readers—a whole public health nurse's curriculum in outline.

Condensed as this mass of materials is into less than four hundred pages of large type, with many illustrations, it is necessarily a series of dogmatic statements.

From this side of the water, the mixture of subjects—a little hygiene, much sanitation, some therapeutics, and smatterings of all sorts of other things (including p. 64), how to take out ink stains!) seems rather incongruous and calls up sinister forebodings of mental indigestion. Far too condensed, technical and sketchy for the beginner, we can imagine that its principal use will be as a "remembrancer" for those already well trained in the fundamentals. In this country we have at present no type of public health woman worker actual or prospective to whom this book would—or should—appeal. Principles are far more valuable to our workers at the present time than practice, since the latter is almost hourly changing, improving, developing, becoming simplified, as well as covering new fields. Dr. Hutt's book is distinctly applicable to those who desire formularized statements to be learned by heart and to be mechanically applied. It will therefore always have a certain vogue, but a vogue which we hope will never become established in Canada.

Of many technical criticisms possible, a few may be cited. The chief defect is the great variety of subjects, superficially "laid down" without correlation or explanation. Relatively minor is the out of date treatment of ventilation, and

of food values, written as though the advances of the last 15 or 20 years scarcely existed; and such unexplained and undeveloped dogmatisms as the following (p. 135): "The ceilings of dwellings should not be papered." (Why? What disease or disability to inmates will follow? It is an almost universal practice in this country, and without attendant mortality or morbidity!); (p. 91) "Adults give off 1600 calories per hour" (this makes 38,000 calories per day!); (p. 224) "In susceptible persons, if tubercle bacilli are present in the air breathed, the lungs are attacked; if milk containing tubercle bacilli is consumed, the intestine is attacked." This furnishes a very simple and memorizable epidemiological formula—alas that it should be as false as it is easy!

(p. 65) "Body lice and fleas do not multiply on persons who keep themselves clean: this (sic) is due to frequent changing of the underclothing." Apart from the delectable phraseology this sentence would make it appear that fleas do multiply on dirty humans, which is not true; they multiply in shavings and such like litter, not on the human body. The whole implication is misleading, for no amount of cleanliness will avoid infestation if there be efficient exposure; nor will any amount of uncleanness accumulate infestation without such exposure. Contrast with this (p. 233): "Typhus never spreads to the inmates of well-ventilated homes."

The practice recommended in infectious diseases includes terminal disinfection, long since abandoned by the leading cities in this country; and a sheet soaked in disinfectant to be hung over the door of the patient's room (p. 166). "Disease and malnutrition of the mother rarely exist (reviewer's italics) apart from defective sanitation, over-crowding, bad housing, poverty." We cannot believe this statement of England, and we know it is not true in this country.

The reviewer would hesitate long before placing this book in the hands of Canadian nurses whether in training or post graduates. It is of no value whatever to a Canadian physician.

H. W. H.

THE HEART: OLD AND NEW VIEWS. By H. L. Flint, M.D., late Captain R.A.M.C. Cardio-logical Centre for the Northern Command, Physician to the Mansfield Hospital. With an introduction by Sir Clifford Allbutt. Pages XIII, 177, and 66 illustrations including 11

plates. Demy 8vo., 15s. net. London: H. K. Lewis & Co., 1921.

The author of this delightful volume has undertaken a survey of the doctrines from antiquity, following in chronological order the development of our knowledge of the heart and circulation. He has succeeded in presenting a most readable account of the older history of cardiology from early Sumerian times down to Corrigan, and follows this up with presentation of modern methods of study of the heart. Though there are full references to the literature and the recent work of Mackenzie, Lewis, Starling, and others, he has woven in much of his own experience during the war, and speaks as one who knows of what he writes. Methods of investigation are fully discussed and our modern viewpoints well exemplified. With a full discussion of the physiology and pathology of the various cardiac conditions, the principles of treatment are dealt with in a few short paragraphs. A tribute is paid to Osler's help and encouragement in the preparation of the work. It is a capital book for the physician.

J. H. E.

INTERNATIONAL CLINICS. Thirty-first series, vol II. Edited by H. R. M. Landis, M.D., Philadelphia, U.S.A., with medical and surgical collaborators in United States, England and Canada. 1921: J. B. Lippincott Co., Montreal, Que. Price \$2.50 per volume or \$10.00 for the series of four.

The medical and surgical clinics in this volume cover both diagnosis and treatment of a number of important conditions, making the volume one which will appeal to the physician in general practice, while the special articles on some unusual conditions are of great merit. The department of industrial hygiene is well edited and has become a most attractive one. We cannot mention individual articles when all are so good but must congratulate the editors upon the high standard they are maintaining.

J. H. E.

THE ALLEN (STARVATION) TREATMENT OF DIABETES. with a series of graduated diets. By Lewis Webb Hill, M.D., Junior Assistant Visiting Physician, Children's Hospital, Boston, and Rena S. Eckman, with an intro-

duction by Richard C. Cabot, M.D. Fourth edition. Publishers: W.M. Leonard, Boston, 1921.

This is a practical book for "physicians, dietitians and patients." That a fourth edition has been found necessary since the first appeared in 1915 speaks for the place it has made for itself. It is a safe guide to the application of modern methods of treating diabetes, a disease whose mortality has definitely lessened since the introduction of the line of dietetic treatment here described. It is a book for the physician to place in the hands of his patient.

J. H. E.

THE AMERICAN YEAR BOOK OF ANESTHESIA AND ANALGESIA. Vol. II., 1917-18. F. H. McMechan, A.M., M.D., Editor. pp. 483 and index; numerous illustrations. New York: Surgery Publishing Co., 1920.

The exigencies and demands of the war are the editor's reasons for the late appearance of this volume of the year book. In both the science and practice of anaesthesia and analgesia there are many controversial points which require careful investigation and study. In the year book a number of fundamental studies find their place, and some of these are of exceptional merit. The advances made in these subjects in the surgery of war, form some of the notable contributions, while the editor has been convinced that the handling of anaesthesia and analgesia by the various Allied medical services was not what it should have been. The army anaesthetic methods which underwent considerable development and advance are now finding their application in civilian practice, for the practice of anaesthesia is rapidly becoming a specialty in the practice of medicine.

Local, spinal and sacral anaesthesia receive due attention. Your reviewer feels he cannot in fairness select any of the essays and contributions for special mention where the standard of excellence is so high, but extends his congratulations to the editor and expresses the hope that the year book will meet with the success it deserves and secure the support necessary for its continuance. There is a full bibliography of the pertinent literature and we find acknowledgment made to McGill Hospital Unit, Toronto General Hospital and this journal for courtesies extended.

J. H. E.

DISEASES OF CHILDREN. Designed for the use of students and practitioners of medicine. By Herman B. Sheffield, M.D., formerly instructor in Diseases of Children, New York Post-graduate Medical School and Hospital, and Medical Director Beth David Hospital, Consulting Physician to the Jewish Home for Convalescents and the East Side Clinic for Children. With 238 illustrations, mostly original, and nine colour plates. St. Louis: C. V. Mosby Company, 1921. Price, \$10.00.

With so many excellent treatises on diseases of children available to the practitioner and to the student, one picks up the volume under review with some skepticism.

As a college text-book it does not appear to us to be suitable because insufficient space is devoted to the diseases of nutrition in infancy; only eleven lines are allotted to the consideration of vitamins. On the other hand the book will prove valuable as a hand book for the general practitioner who, in addition, has in his possession a good book on infant feeding. The illustrations are exceptionally good; e.g., facing p. 360 is a very fine coloured illustration of Koplik's spots. The descriptions of the Schick reaction for the detection of susceptibility in diphtheria and the post-operative treatment of pyloric stenosis are given in detail; emphasis is laid on the modern method of the treatment of patients suffering from cardiac affections and an outline is given of the graduate exercises used in the New York cardiac clinics for children. The chapter dealing with mental deficiency in children is well illustrated and simple mental tests for children from six months to four years of age are included. On the whole the book is a valuable contribution and will be of considerable help to the general practitioner.

H. P. W.

WHAT TO DO IN CASES OF POISONING. By W. Murrell, revised by P. Hamill. Twelfth edition, pp. vi. and 273; 32mo.; 4s. 6d. H. K. Lewis, London, 1921.

This invaluable little book should be in the possession of every practitioner. Further, he would be advised to have this new edition, which has been thoroughly revised, improved and brought up to date by a thoroughly trained man. The general advice in the introductory chapter is ex-

cellent and should be part of every practitioner's general knowledge. The ignorance of the profession in Ontario on the subject of poisoning, and the mistakes made by them in their handling of cases and in medico-legal evidence are extra-

ordinary. The reviewer regrets that the author does not insist sufficiently on copious washing of the stomach with water; three or four washings are not enough. At least twenty pints should frequently be used. V. E. H.

Books Received

A Review of those which are considered noteworthy will appear in a later issue.

CREATIVE CHEMISTRY. Edwin E. Slosson. Century Co., 353-4th Ave., New York.

GENERAL PATHOLOGY. Horst Oertel. Paul B. Hoeber, New York.

NUTRITION AND CLINICAL DIETETICS. Herbert S. Carter, M.A., M.D., etc. Lea & Febiger, Philadelphia, Pa.

DISEASES OF THE SKIN. Oliver S. Ormsby. Lea & Febiger, Philadelphia, Pa.

INFECTIONS OF THE HAND. Allen B. Kanavel, M.D. Lea & Febiger, Philadelphia, Pa.

MOUTH HYGIENE. Alfred C. Fones, D.D.S. Lea & Febiger, Philadelphia, Pa.

THE EVOLUTION OF DISEASE. Prof. J. Danysz. Lea & Febiger, Philadelphia, Pa.

THE ALLEN TREATMENT OF DIABETES. Lewis W. Hill, M.D., and Rena S. Eckman. W. M. Leonard, Boston, Mass.

WHAT TO DO IN CASES OF POISONING. Wm. Murrell, M.D., F.R.C.P. H. K. Lewis & Co., Ltd., 24 Gower Place, W.C.1, London, Eng.

AUTOEROTIC PHENOMENA IN ADOLESCENCE. K. Menzies. H. K. Lewis & Co., Ltd., 24 Gower Place, W.C.1, London, Eng.

CLINICAL EXAMINATION OF THE NERVOUS SYSTEM. G. H. Monrad-Krohn, M.D. (Christiania.) H. K. Lewis & Co., Ltd., 24 Gower Place, W.C.1, London, Eng.

TREATISE ON FRACTURES IN GENERAL, INDUSTRIAL, AND MILITARY PRACTICE. John B. Roberts, A.M., etc., and Jas. A. Kelly, A.M., etc. J. B. Lippincott Co., Montreal, Que.

INTERNATIONAL CLINICS, Vol. II, Thirty-first Series, 1921. H. R. M. Landis, M.D., Philadelphia, U.S.A. J. B. Lippincott Co., Montreal, Que.

HYGIENE FOR HEALTH VISITORS, SCHOOL NURSES AND SOCIAL WORKERS. C. W. Hutt, M.A., M.D., etc. Methuen & Co., Ltd., 36 Essex St., London, W.C.2, Eng.

TRANSACTIONS OF THE AMERICAN UROLOGICAL ASSOCIATION. Williams & Wilkins Co., Baltimore, Md.

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